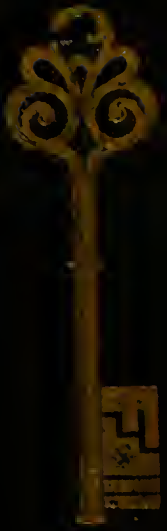

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ABBREVIATIONS USED IN THIS WORK.

A. Phar. Ass.—American Pharmaceutical Association.

B. P.—British Pharmacopœia.

C. & D.—Chemist and Druggist (The).

E. P.—Edinburgh Pharmacopœia.

D. C.—Druggists' Circular and Chemical Gazette (New York).

N. R.—New Remedies.

PREFACE.

ENCOURAGED by the success of a former effort the compiler of the "Chemists' and Dispensers' Vade Mecum" again ventures to dabble in book manufacture, in the belief that useful selections have their value. The author, here, offers little of his own; but chiefly the fruit of others' labour—the results arrived at by those industrious workers who have distinguished themselves in the paths of pharmaceutical research, placed, it is hoped, before the reader in a practical and useful form.

Life is limited. Art and Science unlimited. It has been said with a good deal of truth that we "have one foot in the grave before we have learned how to live." It is also agreed that "knowledge is power." Therefore, as in the case of the benefactor who makes two blades of grass to grow where only one grew before, so may he who shortens our labour and enables us to get at double the knowledge in half the time be considered, at least, *not* a useless man. Hence, the object of the following pages (under perhaps an ambitious title) is to enable the reader to get at the pith without the trouble of removing the bark —to convey a knowledge of facts.

The critical reader will, perhaps, question the quality of the "pith." In this the compiler must of course await judgment. Those who know what they want will, perhaps, appreciate the efforts of the author, who, in a spirit of egotism, flatters himself that at whatever page the book is opened some bit of useful, practicable, *payable* information, will be found.

Mr. Albert E. Ebert, of Chicago, remarks: "Not the least duty of a pharmacist is his obligation to communicate to his fellows of the craft, such improvements in manipulation, in apparatus, and in the convenient arrangement of the shop, as his every-day experience suggests. How much practicable *desirable* information is hid under a bushel by this sin of omission can only be conjectured. But, if the thousands would communicate their personal experience *what a fund of useful knowledge would accumulate!*" Now this is the key-note of the author's apology for this compilation—it is an attempt to arrange the knowledge obtained by "every-day experience behind the counter," in the laboratory, and from patient research in science, in a convenient form for reference, But the author must confess to having taken great liberty with the text of the various mediums quoted—particularly with the *Pharmaceutical Journal* and the *Chemist and Druggist*—in cutting, arranging, dovetailing as it were, the matter into a condensed form, and though the authorities are mostly given, they must not be accepted as verbatim extracts. In all these instances, the compiler offers his apology and trusts he has not rendered ambiguous the meaning of the writers, and that his efforts to give only the "alkaloid" or "essence" of pharmaceutical knowledge may meet with the reader's approval.

One object of the work it will be seen is to assist the reader in "Prescribing." Now Professor Attfield in his address to the British Pharmaceutical Conference at Southampton said, "Let there be no pretence to professional medical treatment mixed up with pharmacy," on which *The Times*, of Aug. 24, 1882, very truthfully and common-sensibly remarks—

> "The fact is there is no little variance between theory and practice in this matter. The theory of course is, that to the doctor only should belong the power of prescribing remedies, and that the pharmacist has nothing to do but compound them. The physician is the man of science; the pharmacist is merely his instrument. Such is, no doubt, the ideal relation between the two, from the physician's point of view. But the popular mind does not always move in this elevated region. In scores of simple cases the chemist's advice is almost as good, or, at any rate, it is thought to be almost as good, as the doctor's, and, what is more to the point, it is a good deal cheaper to obtain. If chemists oftentimes do harm by prescribing, it must nevertheless be remembered that as often as not the real fault lies with the applicant for their advice. A man often goes to the chemist's shop, not so much for

> specific advice as for the purpose of obtaining a remedy that he wants, or thinks he wants. He is hoarse, and thinks a gargle would do him good; he is bilious, and asks for a simple purgative or a saline draught; and the chemist has nothing more to do than to give him a remedy which he has compounded scores of times, at the doctor's bidding, in similar cases. Where is the line to be drawn? Common sense alone can draw it, and the common sense must quite as often be that of the patient himself as of the chemist to whom he applies. The practice of consulting pharmacists exists, and, human nature being what it is, we doubt if it s possible to do very much in the way of checking it. Medicine in one sense, is a science, or a whole assemblage of sciences, demanding the highest skill and the widest experience for their mastery and practice. In another sense it is an art of which almost every man considers himself to have at least a smattering. The higher sphere properly belongs to the physicians; if the pharmacists have gained a footing in the lower, it is only because they have thereby satisfied a popular need."

Thus, then, it would appear, according to common sense and popular opinion, that an experienced, conscientious *prescribing* Chemist is as useful a member of society as either the Apothecary or the Physician.

The author regrets the limit of the book has not allowed him to carry out his full plan of the work, but he trusts to fulfil his intentions in a future "Chemists' Handy Book;" in the meantime, if the "CHEMISTS' AND DISPENSERS' VADE MECUM" proves a *locum tenens* or "temporary assistant" in the daily work of the shop, his labour will not have been entirely thrown away.

229, CAMBERWELL ROAD,
December, 1882.

THE

CHEMISTS' & DISPENSERS' VADE MECUM.

THE ART OF DISPENSING.

"Physicians' Prescriptions Accurately Prepared" is the Dispensing Chemist's motto, but to accomplish this desirable end with neatness, facility and correctness, certain requirements are essential in the Pharmacy and the Pharmacist.

"Dispensing, as a branch of pharmacy," says the *Chemist and Druggist*, "has of late occupied much attention. It is quite clear that a merely scientific education cannot be the sole passport to success in business. Seeing, then, that chemistry and the allied studies fail of themselves to make a competent man of business, the question comes: How shall we best provide for that practical knowledge of pharmacy which all in common hold to be essential?

"Constantly it happens that the pharmacist, fresh from the lecture room, is disappointed because his researches have not led him into the most elementary conception of things, with which, as a tradesman, he must be familiar. Nothing in trade will stand in the place of a personal (and practical) knowledge of the trade pursued, and no branch of pharmacy is more important than the practical art of dispensing. It is the ladder by which he must rise, and in certain districts the basis upon which his reputation rests."

The *Pharmaceutical Journal* observes:—"Perhaps there is no department of the business of a pharmacist demanding more care and attention than that of dispensing. In it he is constantly meeting with fresh difficulties, which frequently the teachings of experience alone can solve. Some members of the medical profession write as though incompatibilities had no existence; others throw the most incongruous materials into a mixture and expect the dispenser from those ingredients to develop an elegant and palatable result. Hence the cry for assistance, and the earnest appeal to know what in the presence of certain difficulties would be done by those leading houses that are representatives of high class pharmacy. It is unfortunately the case that many of those who write prescriptions do not take the trouble to make themselves acquainted with changes, the result of progress, necessarily involved in a new Pharmacopœia, and it is equally unfortunate that immature preparations are sometimes introduced into the Pharmacopœia, and trifling changes made in some of those preparations which remain, without any apparent object, making a distinction without a difference, by no means indicative of progress but rather of an 'advance in the rear.' A spirituous solution of chloroform was found useful, and frequently prescribed, hence the spirit of chloroform was introduced into the Pharmacopœia. Taraxacum also was a favourite with some prescribers, but there was no officinal fluid formula, hence succus taraxaci found a place there also; but in both these cases some members of the medical profession ignore the official formulæ for sp. chloroformi and suc. taraxaci, and continue to order proprietary preparations which have no official existence. This may seem a light matter to those who are in a position to know what the prescriber means, but it is no light matter to those less favourably situated who, guided by the Pharmacopœia, entertain a very reasonable belief that every prescriber is acquainted with its contents and will prescribe accordingly,

"The duties of a pharmacist are two-fold. In the first place he has to satisfy himself that every preparation is properly made and also properly preserved for use. In the second place, that those preparations be accurately dispensed in accordance with the prescriptions of the several branches of the medical profession. If the former be neglected no amount of accuracy in dispensing will secure uniform results, and if the latter be carelessly attended to, or conducted without a fair amount of intelligence, all the advantages of scientific training which may have been reasonably expected to result in success, will be neutralized.

"In a paper read before the Glasgow University Medical Chirurgical Society on the Relations of Pharmacy to Medical Students, by Mr. John Edmund Fairlie, published in *The Pharmaceutical Journal*, the author says, 'I am convinced from what I have seen, that a pleasant looking and elegant preparation will go a long way in helping its efficacy, and the apathy and disgust often evinced at the taking of ugly medicines must have a great counteracting effect upon their curative properties. Among these I might mention nauseous oils, and resinous juices not made into a proper emulsion; too large powders, pills, &c.; resinous tinctures mixed with water, &c.'

"These observations, emanating from a member of the medical profession, deserve our careful attention; although intended mainly for the prescriber, they apply equally to the dispenser of medicines, who, taking the Pharmacopœia as his standard for the preparation of the several remedial agents contained in it, has also to carry out faithfully the intentions of the prescriber in the compounding and dispensing of prescriptions.

"An experienced dispenser should in most cases be able to state that with certain combinations a departure from the normal condition will eventually take place; it may be a change of colour or a separation. He should be in a position to anticipate the changes which must sooner or later occur, and to explain the reason when it is called in question. This is the result of experience acquired by long practice, but the extent of practice usually necessary may be much limited by the dispenser's intelligent and careful attention to details, assisted by suggestions freely placed at his disposal."

On this subject Mr. Joseph Ince remarks in the *Pharmaceutical Text Book, 1869*: "No greater kindness can be done to a rising pharmacist than to introduce him to a work by the late Dr. Paris, called the Pharmacologia. It would be difficult to point out an essay at once so pleasant and instructive as the historical introduction, being an enquiry into the causes which have produced characteristic revolutions in the history of medical bodies, and the classification founded on them. Next follows a section on the theory and art of medicinal combinations, illustrated by a mass of formulæ, while the second volume is confined to Materia Medica. This admirable book is commended to all those who are aware that the key to dispensing is perfect knowledge of the substances dispensed, the theory of their combination, and a fair insight into their therapeutic action."

Not the least difficult part of a dispenser's duties is to compensate for the want of practical knowledge of pharmacy by some of the medical profession.

THE PRESCRIPTION DEPARTMENT.

The following matter is condensed chiefly from an able article on "The Art of Dispensing," contributed by various hands to the *Chemists' and Druggists' Diary*, 1880.

This section of the shop should be the particular pride and study of the proprietor. It always pays well to devote the most careful attention to this department. It should be so situated that the dispenser will be able to carry on his work without interruption, and without having any of the other assistants pushing by him.

Let the question of profit gained from the dispensing of prescriptions be a secondary one; therefore use only the finest quality of drugs and chemicals which can be procured. Dispense medicines with the feeling that an artist has in his work, and so will you make an art of your work. The dispenser who economises on his drugs is a rogue, but he who economises on his bottles, corks, string, paper, sealing-wax, and careful manipulation, is an arrant fool.

To write neatly is a very important requisite for the dispenser, and the youth who will not take the trouble to cultivate that first branch of his art had better abandon any thought of fitting himself to become a dispenser of medicines.

The prescription book should contain not only a faithful copy of every prescription dispensed, but notes should be recorded in the margin of any difficulties met with, and the process by which they were overcome. Both the prescription and prescription book should be carefully preserved from damage during the preparation of the medicine.

It is of great importance that poisonous substances should be kept in a locked-up cupboard, and the deadliest of them kept in another lock-up cupboard *within* the first. A special pair of scales should be kept for the poison cupboard, and every quantity of poison taken from it should be checked by a second person. Every doubtful reading of a prescription should be referred to others before being dispensed, and when any doubt exists, reference, if possible, should be made to the writer.

Dispensing counters have been brought now to great perfection for the convenience of the dispenser and despatch of business, the arrangement for which may be better left to such a firm as Messrs. George Treble & Son, chemists' fitters, of Hoxton, or the proprietor's ingenuity and requirements. In all cases, however, it is very desirable that a fair sized desk should be at one extremity of the dispensing counter, with the label drawer and all necessary books of reference close by, and an open sink at the other end, provided with plenty of water, a perforated shelf to allow mortars, &c., to drain, with a complete set of bottles containing all the drugs and chemicals likely to be required.

Never have two prescriptions going at one time. Of course, if there is an infusion, you will set that on—set the jar on one side with a label between the cover stating what it is. You can then go on with another prescription. But having finished one, clear up all mess, put away bottles, measure, and mortars, before beginning anything else.

It is desirable that one person should copy the prescription, write the label, and dispense the medicine. The copying should always precede the dispensing. In every case the dispenser should never let his medicine leave him without making a final reading of the prescription, concentrating all his attention on it, and then give a final reading to his copy.

Errors in the Prescription.—In these cases, if possible, reference should be made to the writer. Caution must, however, be used in concluding that a *fancied* error or omission is *real:* for instance, some dispensers invariably add acid to a mixture containing quinine, although a solution of the alkaloid is not prescribed. Now, many physicians prefer administering quinine in *suspension*, and it is decidedly less disagreeable taken in this manner, especially when large doses are exhibited.

It would greatly relieve the anxiety of dispensers if prescribers would adopt a rule of initialing unusual doses, for many instances occur where it is impossible for the dispenser to know whether the dose is safe or not: for instance, the B.P. dose of pot. iodid. is 2 to 10 grains, yet 20 grains is a frequent dose, and even 1 to 2 drms. twice or thrice a day, while some patients experience very unpleasant effects from a single dose of 2 grs. Again, the B.P. dose of ext. ergotæ liq. is 10 to 20 m., although 1 drm. is a very common dose, and in some cases 4 drms. or 1 oz. may be given with impunity.

In labelling shop bottles, and the bottles devoted to dispensing purposes, where similarity is approached, the difference should be prominently and unmistakably indicated: for instance, the compound preparations, the dilute acids, &c., should have a bold "comp." or "dil." on the *front* of the bottle on *a second line.* Classification of bottles and drawers into groups of tinctures, wines, seeds, barks, potassium salts, sodium salts, &c., each group being arranged alphabetically, is to be recommended as tending towards greatest freedom from error by compelling the dispenser to *read the label.* Nothing involves greater risk than shelves being divided into small sections so that the dispenser fancies, from force of habit, he could find anything in the dark. At the back of the dispensing counter, behind the dispenser, is the most appropriate situation for the lockers and drawers to contain the bottle-pots and boxes required in preparing prescriptions.

"Some dispensers," says Mr. Joseph Ince—no mean authority on this matter, "pride themselves on compounding prescriptions with the smallest additional help. This is a habit learnt during apprenticeship which may wisely be abandoned. About two palette knives, a couple of measures, and a few weights, represent their whole stock of apparatus. Attention thus wasted on needless calculation and manœuvring might be much more usefully employed. Let me advise, speaking not without experience, as many measures, knives, mortars, basins, and slabs, as are of the slightest use,—at least an 8-oz., 4-oz., 2-oz., 1-oz., and a minim measure; two sets of dispensing knives and weights, and have ready to hand in convenient quantities the whole range of substances of which you are in constant want. Trivial as this may seem, such arrangements are the basis of excellence in dispensing, and they may be summed up thus:—Surround yourself with every possible convenience in order to facilitate the work in hand; give yourself not less than three-feet-three of counter space. In furtherance of this intention, many substances can be so prepared as to be ready for immediate use. The B.P. has set the example in the granulated sulphate of iron. Sulphate of soda, a most unmanageable salt, should be treated the same way, and, if granulated, by remelting, is at once adapted for dispensing. The wholesale druggist will, if requested, supply acetate of potash in a useful shape, while ext. rhei, the most intractable of extracts, may be presented in a different dress. Evaporate it in shallow dishes with very gentle heat, in like manner as the scale preparations, till quite dry. Collect and keep it in stoppered bottles. If well made it has the appearance of the ferri potass. tart. Keep the more common extracts both in soft and hard condition; ext. coloc. co., ext. rhei, and the various compound pill masses in powder.

"It is hardly necessary to point out the advantage of carefully prepared solutions—no rule or guide to selection can be given, as each pharmacy must consult its own requirements. Several solutions which have long been anticipated by retail pharmacists are now recognised as official formulæ.

"Three will represent the rest.

"1. *Liquor Atropiæ Sulphatis:*—℞ Atropæ sulphat., 4 gr.; aquæ destillat., 1 oz. 2. *Liquor Morphiæ Acetatis:*—℞ Morphiæ acetatis, 4 gr.; acid. acetic. dil., 8 m.; sp. rectif., 2 dr.; aquæ destillat., 6 dr.; 4 gr. in 1 oz. 3. *Liquor Strychniæ:*—℞ Strychniæ crystals, 4 gr.; acid. hydrochloric dil., 6 m.; sp. rectif. 2 dr.; aquæ destillat., 6 dr.

"Mix the hydrochloric acid with four drachms of the water, and dissolve the strychnia in the mixture by the aid of heat. Then add the spirit and the remainder of the water.

"These solutions, to which a dozen more may well be added, are likely to be more accurate than when extemporaneously produced—certainly more correct than minute weighed quantities of sulphate of atropine, acetate of morphia, and strychnine.

"As an example of a strong solution take *Liquor Hydrargyri Bichloridi:*—℞ Hydrarg. bichlorid., 16 gr.; sp. rectif., 1 oz.; that is, 2 gr. in dr.

"There remains the long list of substances which, though often employed, are dissolved with difficulty, such as manna, Epsom salt, extract. taraxaci, extract. glycyrrhizæ, and others; all should be ready for instant combination in known definite strengths. Dissolved beforehand, they materially increase the elegance of a mixture; in some cases alter its character entirely. Dissolve iodide of iron in water as required, the mixture is dark brown or black, but take the precaution to make a concentrated solution from iodine and iron wire, the result will be a light green, or almost colourless recipe. *All* these solutions, even when duplicates of pharmacopœial formulæ, should be kept together in one place, and under no conceivable circumstances should be allowed to stand amongst general retail preparations. We cannot be too careful to guard against mistake."

"Great convenience is obtained, and loss prevented," continues Mr. Joseph Ince, "by having five squat half-ounce stoppered bottles filled as follows:—1. Ol. anthemidis; 2, ol. carui; 3, ol. cinnamoni; 4, ol. caryophilli; 5, ol. menthæ pip.

"The pestle, broad at the base, narrow at the top, which is invariably supplied by druggists' sundrymen, might now be permitted to retire in favour of the straight cylindrical pestle, which is infinitely superior—the Wedgwood mortar, with scooped out sides and thick in composition, might also disappear.

"In making ointments, never mind how small, use a good sized basin, with ample room to stir. A gain of half an hour may often be thus effected, and the ointment turn out white. Strain this through the muslin, and observe the change. It is not uncommon to see an ointment melted in a little pan, and *in that* stirred till cold. Let me, without being dogmatic, advise the other plan.

"The dispensing of mixtures may be frequently so conducted as that when finished the measures used may be very nearly clean—when an extract has to be incorporated, put the water (if any) on it first. Then write labels and finish all necessary arrangements. Meanwhile, the extract will be reduced to the state in which it may most easily be manipulated.

"Here a friend offers me six excellent notes—they are not mine.

"1. Detached caution labels, as 'Poison,' 'To be Shaken,' and 'For External Use," should be placed on the upper part of the bottle, near the shoulder, because then they are read first, which is of the utmost importance. If pasted at the bottom of the bottle, below the written label, the hand that holds the bottle conceals involuntarily the note of warning which the dispenser was most anxious to convey.

"2. When two tablespoonfuls of an eight-ounce mixture are ordered to be taken, the directions ought to state 'an eighth part,' and the bottle should be graduated. A modern tablespoonful holds an ounce, hence double doses may be given by too literally following the directions.

"3. In making effervescent mixtures with potash or soda, and citric acid, or the like, during the winter months, the water should be slightly warmed, which will greatly promote the effect intended, and prevent subsequent explosion.

"4. In blending into emulsion balsam and mucilage, the action is retarded by the acidity of the mucilage. Made from pulv. acaciæ it is always acid. The addition of a few drops of liquor potassæ is of appreciable advantage.

"5. To exhibit castor oil. Pour the dose into an ounce of cinnamon water, and a little syrup; beat together with a small stick, and drink immediately when well intermingled.

"6. Mist. amygdalæ and compounds. Blanch the almonds in cold water, not hot. This is also the direction of the Paris Codex.

"The vast economy of time due to instant reference should not be overlooked. I would advise the dispenser, at his leisure, to tabulate whatever in the Pharmacopœia, or in his daily occupation, may seem important. For instance, the strength of solutions which contain active ingredients, such as preparations of opium, mercury, arsenic, and strychnine. This table may be arranged, grouped and in alphabetical order.

"It is needless to remark that to the student preparing for examination no better exercise could be recommended; a few hours' work thus spent would save days of ill-directed labour.

"Nothing will supply the place of carefully practised manipulations. Yet, while each must depend on his own individual exertions, it is well occasionally to consider such points of interest as are common to dispensing as an art.

"Let me earnestly endeavour to persuade the dispenser to shake off morbid anxiety about his work—care is one thing; perpetual carking nervousness is another, an unhealthy state of mind against which we are specially called to fight. Cultivate a cheerful frame of thought, should it not be a natural endowment; do not scent mistakes which may never happen, nor anticipate imaginary dangers. Hope, next to knowledge, is the best armour for that life's battle which we all must wage."

AIDS TO DISPENSING.

Capping.—With leather it is a good plan to soak the skin for a short time in aqua calcis, which bleaches it, and facilitates its being drawn more tightly over the cork. Paper capping in the ordinary way is now rendered a thing of the past by the introduction of the elegant pleated paper bottle caps manufactured by Messrs. F. W. Hunt & Co., of Little Windmill Street, W. Every chemist who believes in careful manipulation we think will appreciate and adopt them, for they give elegance and finish to a bottle of medicine hitherto unobtainable.

Soulan's process for this purpose gives a semi-transparent capsule of any colour and of very pleasing appearance, especially if the cork has been previously impressed with a name, monogram or trade mark. Purified resin 7 dr., ether 10 dr., collodion 15 dr., aniline red q.s. Dissolve the resin in ether, mix it with the collodion, and colour to taste. Dip the cork and neck of the bottle in it, turning the bottle for an instant in the hand as you withdraw it, while the composition sets.

M. Potel has introduced the following compound for capping bottles :—Soak gelatin in water for a short time, then dissolve it in glycerin, the former being in excess ; to half the amount of glycerin thus used some tannic acid is added, and solution aided by the heat of a water-bath ; these solutions are then mixed, when the compound is ready for use. Any desired colouring matter may be added, and if required for moulding into ornaments, sulphate of barium—Pattinson's white (chiefly a hydrated oxychloride of lead), or white lead, may be worked in it until the correct colour and texture is arrived at.—*Monthly Mag. Pharm.*

Filling Bottles with Oil.—This should invariably be done by means of a small funnel, so that not a particle of oil should touch the neck of the bottle, then securely cork the bottle. Oils bottled in this manner will keep very much longer sweet than if corked with an oily neck.

Ol. Amgyd. Ess. should be kept *sine* acid. hydrocyan. To test if any acid be present, place a drop of the oil on a white dish, add a drop of solution of potash, and a minute quantity of a ferrous and ferric salt. On acidifying the mixture, Prussian blue will be formed if HCN is present.

Acid Hydrocyan. Dil. is best measured with a long graduated syringe, and put into the bottle last. This acid will keep well if prepared as follows:—Acid. hydrocyan., P.B., 1 oz., glycerine 3 dr., aqua 2 oz., in a corked bottle. N.B.—A very distinct caution label attached, and dose always checked.

Powders containing any deliquescent substance should be wrapped in waxed paper, and in the case of ammonia be put into a bottle as well.

If spt. vin. rect. be objectionable in powdering camphor, a little soap is a fairly good substitute.

Artificial Waters.—In preparing these never rub the essential oil with magnesia; it being slightly soluble in water, the magnesia might precipitate alkaloids of phosphates from a mixture. It may be detected by rubbing a small portion of calomel in a mortar with the suspected water: if magnesia be present, the calomel is partly converted into black oxide. The best way is to rub the oil with powdered pumice or kaolin.

Distilled Water should always be used, since the impurities of tap or spring water give a very different *appearance* to some mixtures. Tinct. lavand co. gives a bright mixture with distilled, but a muddy one with tap water. Tinct. card. co. produces with distilled water a reddish-brown colour, but with tap water a brilliant crimson, as though ammonia had been added.

The following are examples in which it would be improper to use other than distilled water:—

(No. 1) argent. nit. 5 grs., aqua 1 oz.; (No. 2) syr. ferri iodid. 1 oz., aqua 4 ozs.; (No. 3) plumb. acet. 12 grs., spt. vin. rect. 1 dr., aqua 4 ozs. In some cases it is desirable even to boil the distilled water, for if it happens to contain carbonic acid, or atmospheric air, decomposition will be accelerated. Nos. 1 and 2 are good examples; also, in dispensing No. 3, the spt. vin. rect. should be diffused through the water before the acetate of lead is dissolved in it. The spirit seems to further the expulsion of the air and carbonic acid gas, which are most present when the distilled water is not fresh.

Fresh Infusions should be used whenever practicable, and cold—cooled by standing the vessel containing them in cold water if necessary.

Aloes.—When aloes is prescribed without specification of the kind, Socotrine should always be used.

Hot Water Plate, or small water-bath, should be attached to the dispensing counter for evaporating pills to a proper consistence, adding a little tragacanth if necessary.

A smooth slab of iron, about nine inches square and one inch in thickness is also a useful adjunct. It is quickly warmed over a gas flame, and retains the heat. Pills, otherwise quite unmanageable, may be frequently rolled with ease on such a warmed slab. Extracts and pill masses can be speedily inspissated, care being taken not to heat it beyond 80° or 90° C.

Cleanliness of scales, measures, mortars, and correctness of scales is essential to accuracy in dispensing. By this quality you may judge a good dispenser.

Where it is required to combine quickness with accuracy, the measuring of fluids may be much more definitely effected than by weighing them: liq. arsenicalis, and liq. strychnia can be much more accurately dispensed by measuring than by weighing, and medicines are always administered by measuring.

Straining.—This is a different process to filtration, and is accomplished by means of tow, jute, muslin, lint, cotton wool, glass wool, &c. Tow is most generally used, and makes a good strainer; only sufficient to plug the neck of the funnel should be used, and a little water should be first run through it to remove dust, &c. Jute treated in the same manner, makes a better strainer; it is harsher and plugs the neck of the funnel better, but it is said not to be so inert a substance as tow. Absorbent cotton wool makes a good strainer for small quantities almost equal to a paper filter.

Filtration.—A very simple and useful means for securing rapid filtration has been suggested by Dr. Ebermayer, viz., to place a piece of coarse or fine muslin underneath the paper filter. This arrangement possesses the additional advantage of ensuring the easy and safe removal of precipitates. The American system of filtering syrups will also be found useful. The inventor of this filter was Mr. Wyeth, of Philadelphia, and it is thus described by Mr. Howden, of Gracechurch Street: "He took a cone of felt or flannel, about four feet long, and filled it with several sheets of white filtering-paper beaten into a pulp. As the water passed through it left a deposit of paper felt on the inner surface of the filter, admirably adapted for filtering syrups. It has this further advantage: after it had been used the paper pulp could be washed, when it was as good as ever."

Emp. Canthar. should not be sprinkled with pulv. cantharidis, but a warm spatula used to smooth it.

The powder of chalk mixture may be kept ready mixed, so that 1 oz. of the powder with 7½ ozs. of cinnamon water will form mist. cretæ co., B.P.

Powders for compound pills should be kept in wide-mouthed stoppered bottles, and clearly labelled.

Pil. Assafœtidæ Co.—The mixed gums may be kept in a powdered state, and the bottle labelled:—"Pulv. pro. pil. assafœtidæ co.," 6 parts of which, with 1 part of treacle, makes pil. assafœtidæ co., B.P. (pil. galbani co. P.L.)

Pil. Gambogiæ Co.—Mix the powders, and label: "Pulv. pro. pil. cambogiæ co.," 5 parts of which with one part syrup, forms pil. cambogiæ co., B.P.

Pil. Coloc. Co.—Mix the powders and the oil of cloves, and label: "Pil. coloc. co.," water q.s., forms pil. coloc. co., B.P.

Pil. Rhei Co.—Mix the powders and oil of peppermint, and label: "Pulv. pro. pil rhei co.," 2 parts of which, with 1 part treacle, makes pil. rhei co., B.P.

The above are specimens. Pil. calomel co., pil. aloes et ferri., pil. aloes et myrrh, and others may be kept in a similar condition; but they should always be labelled distinctly as to the excipient, so as to avoid reference and ensure accuracy. If the pill mass to which they are added would be too soft, it is quite legitimate to substitute a dry excipient, such as sugar, pulv. tragacanth, pulv. glycyrrh, bread-crumbs, &c., for treacle or syrup.

The bottle containing saccharated carbonate of iron may be labelled: 4 parts with 1 part of confection of roses makes pil. ferri carb., B.P. Extract of aloes are generally kept in the form of powder.

Mistura Ammoniaci Conc., 1 in 7.—This may be made by emulsifying 1 part of ammoniacum with 4 parts of water. For use, add 1 part to 7 parts of water.

Moist Extracts.—Dr. H. Mac S. Gamble, of Columbia, Mo., says, "Solid moist extract could not only be preserved better, but could be dispensed with greater accuracy, cleanliness, and comfort, if manufacturers would put them in *compressible tubes*, similar to those used for holding oil colours by artists. They would be preserved moist and soft for a long time.—*Scientific American.*

Iodoform Bougies, &c.—Dr. H. C. Howard, in *Chicago Medical Review*, suggests the following ingenious mode of preparing and applying this remedy. He makes a suppository mass by mixing ½ dr. of finely powdered iodoform with 1 oz. cocoa butter, and puts the mixture into an ointment form, then he thrusts a silver tube of the right calibre for the male urethra or female uterus, into the mass, when a portion is of course forced into the tube. When an iodoform application is required the tube is introduced into the urethra or uterine cavity, so that the end of it may be a little forward of the place where the bougie is to rest; a thick wire or piston is now pressed into the tube, which pushes the suppository or bougie out, when the tube is withdrawn.

Syrups.—Easton's may be made, when required, by dissolving the quinia phosph. in syrup ferri phosph.; and adding liq. strychnia, thus:—Quinia phosph. 8 grs.; liq. strychnia B.P. 30 min.; syrup ferri phosph. add 1 oz.

Syrup Ferri Iodid.—If exposed to the light in a window for instance, will keep clear indefinitely, if a piece of iron wire be immersed in it.

Oleate of Mercury.—By dissolving the hyd. ox. flav. B.P., in oleic acid 10 per cent., *e.g.* hyd. ox. flav. 1 dr., oleic acid 10 drs. Mix together in a mortar for 24 hours, stirring occasionally. If ordered with morphia, add 1 gr. of alkaloid to 1 dr. of the oleate.

Mistur. Ferri Co.—The emulsion may be kept ready made, but the iron added only at the time of using. In reference to the rubbing down of poisons, &c., with sacch.

lact., it is best to keep the more commonly occurring ones ready, such as strychnia, morphia, hyd. perchlor., arsenious acid, about 1 gr. in 6 or 8 of the sacch. lact.; such quantities as a ¼ gr. can then be weighed with quickness and accuracy.

Plaster.—Paper shapes may generally be attached to skins, by merely damping the paper. If any adhesive material be used, a thin starch paste is the best, and it should be used freely, so that the "shape" should not roughen the surface of the skin in removal.

Breast Plaster.—Should be about 7 inches in diameter, exclusive of the 1 inch margin, with a hole near the middle of 1 inch in diameter, and with a piece cut out beginning from the hole and gradually widening to about an inch towards the circumference, so as to allow the plaster to adapt itself to the form of the breast.

Fucus Crispus Cataplasm.—Stretch a sheet of wadding on a frame; spread over it a concentrated and mucilaginous infusion of fucus crispus; place over it another sheet of wadding, and strike it lightly with a brush, that the mucilage may penetrate equally throughout. Lay it over a moderately heated stove, and allow it to dry. When required for use it should be placed on a large plate and sprinkled with nearly boiling water. It swells considerably and absorbs a large quantity of water.

Muc. Acacia.—Will keep fresh if put into bottles hot, filled up, and corked. In an emulsion, unless fresh mucilage be at hand, it is better to use the powder.

To Clean Mortars, Slabs, &c.—Tar, oil, resins, balsams, &c., may be readily removed by first scraping thoroughly with a spatula, then wipe out with paper, afterwards with a piece of rag saturated with turpentine, and lastly with cotton, moistened with a little soap liniment, and wash with water. For iodine stains use a few grains of iodide potassium, and a very small quantity of water. For permanganate of potass or iron stains, use muriatic acid, and for indigo strong sulphuric acid, and then thoroughly wash with water.—*American Journal of Pharmacy.*

Tinct. Iodi. Decolorata.—Mr. J. W. White, of Clifton, in Ph. J. 14-5-81, remarks: "As the German Pharmacopœia formula contains hyposulphite of soda, some dispensers may attempt the extemporaneous preparation by its use alone, as by treating the tinct. with about 5 per cent. of this salt an apparently satisfactory preparation is produced; but in a few days the compound will develop into an abominable mess, of which precipitated sulphur and sulphuretted hydrogen will be evident constituents."

The effect of such a preparation being supplied to a patient may easily be imagined.

Mr. White adds: "It is not generally known how small a proportion of ammonia is necessary to produce a colourless solution of iodine if sufficient time be allowed for the combination to be effected. About 2 drs. of liq. ammon. fort. suffices for 4 ozs. of tinct. iodi. B.P., and that 2 dr. of iodine dissolved in 3 ozs. of spirit were discolorized by the same quantity. These preparations have but a faint smell of free ammonia, and are unchangeable. Therefore no difficulty need be felt in keeping a *supply* ready for use."

In all dispensing operations the dispenser will have to use his discretion as to whether the decomposition in any compound or mixture is of sufficient importance to refuse to dispense it.

Prescriptions where *coch.* is written without *mag.*, *med.* or *parv.* being added, Pereira says in his 'Selecta e Prescriptis,' "where no qualification is added to it, it is generally understood to mean a tablespoonful, but some discretion must be exercised by the dispenser; he must be guided by the size of the mixture, the dose, and whether the medicine be for a child or for an adult."

"The well-conducted pharmacy," remarks Professer Parrish, "is a *centre* wherever located. Its owner and his assistants are expected to possess much information on many subjects.

"Not only must they know the properties, uses, doses, and prices of all the varied merchandise in their store, but they should be able to direct the enquirer where to procure anything not falling within the range of their stock. They must tell how to extract grease, iron-mould, ink, and all other stains, and guard their neighbours from numerous petty impositions and frauds to which they are constantly exposed. It will be well if their skill in minor surgery fits them to extract a cinder from the eye of a fair customer, to close the bleeding gash or bind up the mashed finger of the neighbouring mechanic, or stop the aching tooth of the suffering schoolboy. They are liable to be called to administer the needful antidote in a case of poisoning, or to anticipate the arrival of the physician when some sudden and alarming accident has created a panic.

"Besides all these offices which pertain to their business, druggists are rather expected to know where everybody lives thereaway, what time they dine, or come home in the evening, and where their place of business is. They will be asked at what hours the trains leave and arrive, when the mail closes, and whether it is going to rain. Such varied and perplexing talk, often interfering with the responsible duties of the prescription counter, is well calculated to test the temper of the pharmacist. If you cultivate your best dispositions and instincts, you will, I think, learn to meet the annoyances I have hinted at with a mingled politeness and dignity.

"The pharmacist should never forget that, jointly with his colleagues of the medical profession, it is his duty to do all that lies within the range of science and art for the relief of suffering and the cure of disease.

"This duty extends, not only to the cases in which his aid is especially sought, but involve a general readiness to co-operate in the great work of extending and perfecting the resources of the healing art, by contributing the results of his observations and experience to the common stock."

ON LUTES, ETC.

Lutes are of different kinds, according to the description of vessel to which they are to be applied, the nature of the substance to be treated, and the heat to which they are to be exposed. The knowledge of these particulars is important to the pharmacist.

Starch Jelly, thickly prepared in the ordinary manner, serves for many kinds of distillation. It is applied with strips of paper (or linen) to the joints of the apparatus.

Pieces of Bladder are useful to fasten retorts to receivers. They should be firmly bound to the joints with string.

Strips of sheet Indiarubber form a most valuable lute to connect tubing together, or tubes with flasks, or any kind of pneumatic apparatus. The indiarubber should be placed in hot water, after being cut to the necessary size. When this has been done it should be immediately bound round the tubing, and the recently cut edges brought into contact, when they will unite and form a tube impervious, where united, to gases.

Almond Powder, Flour, and Linseed Meal are serviceable. They may be mixed into a paste with water, or the white of eggs.

Clay is frequently employed, especially for operations on a large scale.

Chalk and Linseed Oil or putty, forms a lute which resists the action of moisture. Freshly burnt lime, powdered, mixed with the white of an egg, dries rapidly, and adheres firmly.

Clay and Sand, mixed with hair and iron filings, resist the action of intense heat. Pitch 3 parts, wax 1 part melted, and mixed with brick dust 4 parts, resist the action of water. It is applied by saturating pieces of canvas or linen with it whilst hot, and applying them in this condition to the joints of any apparatus to be secured.

Precipitation.—The fluid to be treated, as well as the precipitant solution, must be quite clear, and if not, they must be filtered. The vessel in which it is to take place should be cylindrical, of greater height than breadth, and so large that the mixture only three parts fills it. Precipitants and solutions to be precipitated, should be somewhat diluted, so that the precipitate may fall in a finely divided condition and flocculent, and also that the salts contained in the solution may not crystallize out of them. But care must be taken not to dilute the solutions too much, as some precipitates are slightly soluble, and a portion of them would in consequence be lost.

The precipitant should be added by degrees in small quantities to the solution, with constant stirring or shaking, to increase the points of contact, and to prevent, in some cases, the liquid running over by effervescence. The liquid should be tested from time to time, to ascertain if enough of the precipitant has been added, which is to be done by filtering a portion of the liquid, and adding thereto some of the precipitant. If nothing now falls therefrom, enough of the precipitant has been employed. When the whole of the precipitate has been collected and washed, it should be dried in the air, or, according to its nature, in a gentle heat. Many precipitates coagulate when they are long diffused in the fluid, and soon partake, more or less, of a crystalline texture. In a medicinal point of view, this change is often detrimental, therefore they should be removed as quickly as possible from the fluid. Precipitate can be dried rapidly between folds of blotting paper, which must be renewed as soon as it becomes wet, or they can be dried by being placed on porous tiles, which rapidly absorb their moisture. By this latter means, very flocculent precipitates may be obtained in a dry state.—*Liebig's Practical Pharmacy.*

Dispensing Solutions.—In cases where salts do not undergo any change by being kept in solution, or where the solution would not rob the mixture of a quantity of the vehicle, the practice of keeping them ready for dispensing is not only allowable, but preferable to weighing the dry salts, for reason before stated.

In making a solution of the more soluble salts, such as the chloride of ammonium and bicarbonate of potash, a very considerable reduction of temperature ensues. This will prevent a saturated solution being obtained, unless care be taken, and time allowed for the equalisation of temperature to take place. Again, if water over 60°F be used, a super-saturated solution will be obtained on the reduction of the temperature to 60°F., but it does not necessarily follow that there will be a precipitation of the salt. A super-saturated solution, if it is not in considerable excess, may be kept for an indefinite time, if the bottle be lightly corked, and if all foreign matter be excluded from the solution. On the other hand, should a saturated solution once begin to crystallize out, it does not cease at the saturating point, but will continue to deposit until the solution be indefinite under the saturating point. Again, it does not necessarily follow that because the liquid is saturated with one salt, the solution will not dissolve more of another salt of unlike kind. Many solutions, if tried, will be found to have this peculiar power, and some very useful purposes may consequently be served.

Where any considerable amount of dispensing is done, the following solution will be found very useful. Most salts, however pure in character, will be found, unless filtered after being dissolved, to deposit a sediment after a short time, though quite clear originally.

Sulph. of Magnesia.—A 20 oz. solution containing 10 oz. of the salt, abel ½ oz. in 1 oz.

Soda Bicarb.—A 20 oz. solution containing 2½ oz. of the salt, label 1 drm. in 1 oz.

Potass. Bicarb.—A 20 oz. solution containing 5 oz. of the salt, label 2 drms. in 1 oz.

Potass. Acetas.—A 20 oz. solution containing 10 oz. of the salt, label ½ oz. in 1 oz.

Solut. of Alum.—A 20 oz. solution containg 10 drms. of the salt, label ½ drm. in 1 oz.

Solut. Ferri Ammon. Cit.—A 4 oz. solution containing 1 oz. of the salt, label 1 drm. in 4 drms.

Liq. Ammon. Cit. will keep very well if made concentrated 1 in 3.

Liq. Ammon. Acet. Conc.—Saturate acetic acid P.B. with carbonate of ammon. This product diluted with 4 parts of aqua = the P.B. solution.

The following list of solubilities may also be worth remembering:—

1 oz. by weight of chloroform dissolves 2½ oz. of camphor, and yields 3 fl. oz.

1 oz. by weight of spirits of wine at 60° o.p. dissolves 1 oz. of camphor, and yields 1000 grs. by measure.

8 oz. by weight of water dissolves 1 lb. of sugar, and yields 18½ ozs.

The fluidity of sugar is therefore equal to 10½ ozs. for each pound; 1 drop of dilute sulphuric acid is required to dissolve 1 gr. of sulph. of quinine, and to re-precipitate the quinia from this solution half a drop of strong solution of ammonia.

Some dispensers make their solution of salts in the bottle, and strain if necessary. It is better to make it a rule always to strain these solutions *into the bottle.* In straining them *from* the bottle you are apt to leave some mechanical impurity adhering to the sides of the bottle, which remains there after the liquid has been poured back into it. The "scale" preparations are an exception to this rule. They can with care be readily and easily dissolved in the bottle, in which they are to be dispensed. A little of the water or aqueous vehicle should be put into the bottle first, being careful not to wet the neck, or it will be blocked up by the adhering salt. A solution is readily formed if the salt falls upon the water, and is quickly agitated—not allowed to "cake" at the bottom.

The following are noticed not so much for their strict saturating power, as from a certain pharmaceutical value, which will at once be apparent:—

Sulphate of Mag.—1 oz. dissolves in 1 oz. of water, and yields 680 grains measuring fully 1½ oz.

Acetate of Potass.—1 oz. dissolves in 1 oz. of water, and yields 680 grains measuring fully 1½ oz.

Chloral Hydrate.—1 oz. dissolves in 1 oz. of water, and yields 680 grains measuring fully 1½ oz.

Iodide of Potass.—1 oz. dissolves in 1 oz. of water, and yields 565 grains measuring fully 1¼ oz.

Bromide of Potass.—1 oz. dissolves in 1⅝ oz. of water, and yields 840 grains measuring nearly 2 ozs.

Citrate of Iron and Quinine.—1 oz. dissolves in 1 oz. of water, and yields 680 grains measuring fully 1½ oz.

A knowledge of the saturating power of many salts more commonly in use is often of importance, and invariably saves time, temper, and waste of material. The following will therefore prove useful in the daily routine of the pharmacist:—

Alum (cryst.)—38 grs. to 1 oz. of water at 60° F.
Chloride of Ammonium.—150 grs. to 1 oz. of water at 60° F.
Boracic Acid.—18 grs. to 1 oz. of water at 60° F.
Borax (cryst).—18 grs. to 1 oz. of water at 60° F.
Sulphate of Copper.—155 grs. to 1 oz. of water at 60° F.
Bicarbonate of Potass. (Hd's.)—130 grs. to 1 oz. of water at 60° F.
Chlorate of Potass.—25 grs. to 1 oz. of water at 60° F.
Bicarb. of Soda (Hd's.)—40 grs. to 1 oz. of water at 60° F.
Phosph. of Soda (cryst.)—80 grs. to 1 oz. of water at 60° F.
Tartrate of Soda (Hd's.)—350 grs. to 1 oz. of water at 60° F.
Gallic Acid.—5 grs. to 1 oz. of water at 60° F.
Sulphate of Zinc.—1 gr. to 1 oz. of water at 60° F.
Salacin.—20 grs. to 1 oz. of water at 60° F.

When larger quantities than the above are ordered to 1 oz., they should be powdered with some of the menstruum cold, and not attempted to be dissolved, and transferred to the bottle, which should have a shake label: by trituration they are finely divided, and easily diffusible by shaking.—*Chemists' and Druggists' Diary.*

Salicylic Acid.—30 grains of this acid can be dissolved in 8 ozs. of water with the aid of 16 grs. of borax: but this, says Dr. E. R. Squibb *(Gaillard's Medical Jour.)*, forms a double salt, and is not a solution of the acid; the best plan that I know of getting the effect of the free acid is to make the amount of acid and water desired, and then add bicarbonate of soda until solution is effected. This makes a solution of the acid in a solution of sodium salicylate.

Mr. R. H. Mushins, of Sunderland, suggests the following table of solution of the strength of 1 in 6:—

No. of grains ordered.		No. of drms. of Solution.	No. of grains ordered.		No. of drachms of Solution.
1 grain	equal to	·1	25 grains	equal to	2·5
2 grains	,,	·2	40 ,,	,,	4·0
3 ,,	,,	·3	1 dr. or 60 gr.	,,	6·0
10 ,,	,,	1·0	2 ,, 120 ,,	,,	12·0 or 1½ oz.
12 ,,	,,	1·2	4 ,, 240 ,,	,,	24·0 ,, 3 ,,
15 ,,	,,	1·5	1 oz. or 480 ,,	,,	48·0 ,, 6 ,,
20 ,,	,,	2·0			

It will be observed that the figures in both columns are the same with the addition of the decimal point (·) in the second column, thus the number of grains ordered in a prescription indicates the number of drachms of solution to be used, 10 grs. requiring 1·0 drm. or 1 drachm, &c. It may be thought by some that where an odd number of grains is ordered, the calculation would be difficult, but this need not be so, if the principle of the standard be grasped. ·1 drm. means $\frac{1}{10}$ drm. = m. 6; ·2 must then = m. 12; ·5 = ½ drm., &c. The placing of the decimal point (·) it should be noticed is fixed by the number of grains ordered; 10 grs. requiring ·1 drm. or 1 drachm.—*Pharmaceutical Journal.*

G. W. Sloan (American Pharmaceutical Association) favours the plan of keeping ready prepared solutions of poisonous and non-poisonous alkaloids, &c., &c., for accuracy and convenience in dispensing. He found that solutions made with *distilled* water carefully filtered, kept in well stoppered bottles in a dark closet of an equal temperature, kept well, and were to be preferred to glycerin, alcohol and sulphurous acid, which were objectionable in cases of subcutaneous injections. He had kept a solution of duboisina in distilled water one year free from floccules.

The following solutions were kept on hand :—

	SOLVENT.	AMOUNT.
Atropia Sulphate	Water	1 gr. to 1 drm.
Calcium Bromide	,,	1 dr. ,, 1 ,,
Corrosive Sublimate	Alcohol	1 gr. ,, 1 ,,
Chloral Hydrate	Water	1 dr. ,, 1 ,,
Duboisina	,,	1 gr. ,, 1 ,,
Eserina Sulphate	,,	1 ,, ,, 1 ,,
Lithium Bromide	,,	1 dr. ,, 1 ,,
Potassium Acetate	,,	1 ,, ,, 1 ,,
,, Bromide	,,	1 ,, ,, 2 ,,
,, Iodide	,,	1 ,, ,, 2 ,,
Zinc, Bromide	,,	1 ,, ,, 1 ,,
,, Chloride	,,	1 gr. ,, 1 ,,
Strychnia Sulphate	Alcohol, 1 Water, 3	1 ,, ,, 1 ,,

THE PHARMACY.—FROM AN AMERICAN POINT OF VIEW.

Having secured a good location, fit it up for convenience as well as for appearance. Fixtures painted pure white, if varnished and kept quite clean, look very well, and are cheap. Marble-topped counters with marble edgings at points not fully covered with glass cases, add wonderfully to the elegance of a pharmacy. The window should be large, and contain the usual insignia of coloured bottles, &c., but snakes, frogs, and spiders are out of place. Chemical apparatus tastefully arranged are always attractive. Every bottle should be kept partly full. Empty bottles produce a bad impression on your customer. Every bottle should be plainly labelled. Unlabelled bottles produce a damaging effect on the cute observer.

Scrupulous cleanliness in your personal attire are most essential requisites for a manager or assistant of a pharmacy. Do not approach your customer with an obsequious smile, but with an obliging air. After receiving an order invite your customer to a chair. If a prescription is handed in, do not read it aloud, or before your customer, but behind the prescription case. Behind every dispensing counter should be found a few reference books to determine quickly any unknown or dimly remembered points brought forward in the prescription. If an ingredient not in stock is ordered, and which cannot be quickly obtained, frankly inform the customer of the fact, rather than suggest a substitute. If a substitute will be accepted it will be asked for, and then with a good grace it may be suggested.

On the receipt of a prescription which is partly illegible, or partly written in a language of which the exact equivalent in English cannot be given with certainty, it is a thousand times better to decline to compound it than to incur the great risk of guessing at its meaning. When possible of course the prescriber should be consulted as to its interpretation, but otherwise, the truth should be told to the customer, who will not fail to appreciate your candour.

Sobriety is a *sine qua non* in a pharmacy. Close economy is also very necessary to financial success. A watchful eye should be kept on leakages and losses. Indeed the general success of pharmacists financially is rather due to the habits of economy which they usually fall into, than to any intrinsic richness or pecuniary fertility in their line of trade.—*The Pharmacist.*

DISPENSING DIFFICULTIES.

MIXTURES.

INTRODUCTION.

These General Rules, with Examples immediately following, are condensed from the CHEMISTS' & DRUGGISTS' DIARY *for* 1880.

This class of medicine is generally considered to require so little art in compounding, compared with the difficulty of reconciling a rebellious pill mass, that certain principles which should be observed in preparing them are often overlooked by dispensers.

A typical mixture is like a quadruped—it has four legs to stand on. According to Pereira these are, the basis, the auxiliary (*adjuvans*), the corrective (*corrigens*), and the vehicle (*excipiens*) ; but, as of late the tendency has been towards simplicity in prescribing, it frequently gets dismembered into a biped ; either the auxiliary or the corrective, and, what is of more importance to the pocket of the Pharmacist, the vehicle, are frequently omitted. The mixture is then called " drops."

Nearly all dispensing operations are more or less chemical ones. Dispensing is chemistry applied to the art of pharmacy, and the skill and knowledge of the dispenser are generally most shown in the observance of this one fundamental rule : " In dispensing a physician's prescription *to have as little chemical action take place among the ingredients of the formula as possible, unless such is clearly ordered or intended by the prescriber.*"

To take an example :—

Ex. 1. *Liq. potass.* ½ *oz., tinct. hyoscyami* 6 *drs., muc. acaciæ* 2 *ozs., aqua camphor ad.* 8 *ozs. ; m.*

The veriest tyro could mix these by simply measuring the ingredients in the order in which they are written, putting them into a bottle and shaking them together ; but the faithful dispenser, remembering the above rule, and having a knowledge of what Dr. Garrod has proved, that the caustic fixed alkalies destroy the medicinal virtues of *belladonna* and *henbane* (notwithstanding which they are still often prescribed together) will measure the liquor potassæ into the bottle first, and dilute it with the camphor water, rinsing the measure with it while doing so, and being careful not to "drown the miller" by adding too much ; then he will add the tincture of henbane and mucilage ; lastly, again rinsing the measure with the vehicle, he will fill up the bottle with it. The modern tendency is to omit the last two, and order the patient to take a teaspoonful in home-brewed linseed tea with the henbane in an inert condition.

To take another example—a bronchitic mixture :—

Ex. 2. *Ammon. carb.* 60 *grs., syr. tolu* 6 *drs., tinct. tolu* 3 *drs., vin. ipecac.* 2 *drs., spt. chlorof.* 3 *drs., inf. senegæ ad.* 12 *ozs. ; solv. et misce.*

It is always convenient to take the ingredients of a formula, especially where these are numerous, in the order in which they are written, and use—weigh or measure—them out in this order. It is less tax on the memory to know when you have got so far among them that you have added all previously prescribed to the one being weighed or measured, and the prescriber who has any knowledge of dispensing generally (?) writes them in this order; and, provided it be borne in mind what has been said above about diluting the first article with some of the vehicle ordered before adding the other ingredients, the order of taking them should as a rule be followed, unless there are reasons for not doing so, as this bronchitic mixture will exemplify. We have here a chemical action required—viz.: to make a solution of a salt. This should be done by using the watery vehicle as a solvent. Where two or more soluble salts are ordered together in a mixture, not decomposing each other, there is no objection to dissolving them together in the menstruum; in fact, it is often the only quick and practical means of getting them dissolved, as when the quantity of vehicle ordered will make almost a saturated solution of one or both of the salts. In making a solution of carbonate of ammonia in the infusion in the case before us a mortar will be required, as the carbonate of ammonia, unless in the state of fine powder—in which condition it is not advisable to keep it—does not dissolve readily enough in aqueous menstrua to enable us to make the solution in a measure glass, with the aid of a glass rod, as might be done with the bicarbonates of potash and soda.

The rule in preparing these mixtures should be, therefore: make a solution of the salts first, using the vehicle, which is generally aqueous, as a menstruum; strain into the bottle, dilute with more vehicle passed through the strainer, add the tinctures or spirits, measuring small quantities first, shaking after each addition; then add the syrup or any mixed preparation ordered; lastly, fill up with the vehicle and shake again.

Another example (No. 3), is a mixture containing insoluble salts with tragacanth to suspend it, a sort of semi-emulsion. The great object in this is to give the patient in each dose of the mixture an equal quantity of each ingredient, having the solids suspended in it with the aid of the gum in the state of fine powder.

Ex. 3. *Bismuth subnit.* 2 *drs.*, *mag. carb.* 1 *dr.*, *acid hydrocyan.* (*Scheele*) 6 *drops*, *tinct. capsici* 10 *drops*, *tinct. opii.* 1½ *drs.*, *pulv. trag. co.* 1½ *drs.*, *aqua menth. pip. ad.* 6 *ozs.*; *m.*

The three powders require rubbing together in a mortar, with some of the vehicle gradually poured in to form an uniform mixture; this should be, without the aid of a funnel, dexterously transferred to the bottle, the liquids added in the bottle, *not the mortar*, as is sometimes done, else loss by evaporation of hydrocyanic acid, spirit of the tincture, &c., will take place. The mortar should be rinsed with a little more of the vehicle—this poured into the bottle, and the quantity required to fill the bottle added. Levigated subnitrate of bismuth and carbonate of magnesia, had there been no compound tragacanth powder ordered in this formula, would have diffused themselves readily in this mixture without the use of a mortar being necessary. Where crystalline salts are ordered in a mixture beyond their power of saturating it, they should be reduced to a fine powder previously. Such salts as *chlorate of potash*, *sulphate of potash*, *gallic acid*, *and sulphate of quinine* are frequently so ordered. Sulphate of quinine requires light trituration in being powdered, care being taken not to allow it to "cake" and adhere to the mortar and pestle.

In many cases there is clearly a chemical action prescribed, or intended, as in the following:—

Ex. 4. *Pot. bicarb.* 2 *drs.*, *ammon. carb.* ½ *dr.*, *acid. cit.* 2 *drs.*, *syrup* ½ *oz.*, *aqua ad.* 6 *oz.*; *solv. et misce.*

Here the prescriber intends a semi-effervescing mixture. After powdering the carbonate of ammonia the bicarbonate of potash should be added to it in the mortar, then the acid with a little water (but *not the syrup*), the excess of effervescence allowed to pass off and the solution strained, the syrup added *in the bottle*, and the quantity made up and quickly corked. The mixture will have the fresh taste of a little free carbonic acid it contains. In such cases as this it is better to let the chemical action be as intense as possible, provided there be sufficient vehicle present to hold the resulting salt in solution. This applies particularly to sulphate of quinine—difficult to re-dissolve unless a sufficient quantity of water be present to hold the latter salt in solution.

Ex. 5. Mixtures containing quinine without an acid solvent are not unfrequently a source of a little unpleasantness between dispenser and patient, if the prescription has been made up at several establishments. In such it frequently happens the spirit of chloroform, nitre, or some tincture is ordered in sufficient quantity to effect a solution; if the quinine be mixed with such spirituous preparation and heated in a corked test tube it will readily dissolve, and by a little judicious manipulation may be kept in solution, and a clear mixture sent out without in any way tampering with the prescription.

Ex. 6. *Quinine sulph.* 6 *grs., liq. arsenical* 40 *drops, acid. sulph. dil.* 30 *drops, aqua ad.* 6 *ozs.; m.*

Here the sulphuric acid not only dissolves the quinine but also neutralises the carbonate of potash in the arsenic solution, and forms a small portion of sulphate of potash. This is a matter of no importance, yet the prescription would read better, and show the thoughtfulness of the physician, if the acid solution of arsenic were ordered.

Ex. 7. *Quinine sulph.* 9 *grs., acid. sulph. dil.* 2 *drs., inf. rosæ ad.* 8 *ozs.; m.*

The formation of an insoluble tannate of quinine cannot be avoided. Sometimes a druggist expecting to obtain a perfectly transparent mixture, and surprised at the result, is disposed to filter out the tannate of quinine. This, of course, is unjustifiable, as in every other attempt to remove a legitimately formed precipitate in any mixture, or the addition of any substance to prevent precipitation. *The Boston Journal of Chemistry* says: "Such mixture may be rendered bright by the addition of about 1 part glycerine to 9 of the mixture."

Ex. 8. *Liq. ferri iodid.* ½ *oz., syrup ferri hypophosph.* 1 *oz., quiniæ phosph.* 2 *drs., acid. phosph. dil.* ½ *oz.; m.*

The liquor added to a solution of the quinine in the acid gives a copious finely-divided precipitate of quinine iodide, but if the syrup be added *before* the liquor a clear solution is obtained, from which the iodide of quinine gradually crystallises; the former method should be adopted.

Ex. 9. Quinine frequently forms a troublesome precipitate when resinous or oily bodies are present, and the alkaloid is thrown out by carbonates or hydrates. The best result is usually obtained by diluting, as far as possible, the incompatible solution *before* mixing.

This method answers with the following :—

Ex. 9. *Tinct. quiniæ* 1 *oz., ammon. carb.* 1 *dr., aqua ad.* 12 *ozs.*

But if the *tinct.* be poured into a strong solution of the carbonate the alkaloid separates in flocks, which adhere to the sides of the bottle.

Ex. 10. *Quiniæ sulph.* 2 *drs., spt. ammon. arom.* 6 *drs., aqua ad.* 6 *oz.; m.*

Mixed in whatever manner, the precipitated quinine adheres in lumps. A good mixture was, however, obtained by using pure quinine instead of sulphate (allowing 25 per cent. for H_2O and H_2SO_4); this was diffused through a portion of the water, and the diluted sal volatile added.

Ex. 11. *Quinine sulphate, with alkaline bicarbonates.*

When these are ordered together the bicarbonate should be dissolved in the water, and the quinine rubbed to a fine powder and suspended in the liquid.

Ex. 12. *Ferri quiniæ cit.* 36 *grs., spt. ammon. arom.* 3 *drs., syrup zingiberis* 2 *drs., aqua ad.* 6 *ozs.; m.*

Dissolve the ferri quiniæ cit. in 2 ozs. of water, and the other ingredients in the remainder, mix with gentle agitation.

Ex. 13. *Quiniæ sulph.* 30 *grs., pot. iodid.* 20 *grs., spt. ammon. arom.* 6 *drs., spt. æther nit.* 4 *drs., tinct. zingib.* 3 *drs., aqua ad.* 6 *ozs.; m.*

Numerous futile attempts were made to combine this in a presentable manner: the prescriber being near he was consulted, and direction was given to dispense the iodide and sal volatile in a separate mixture.

Bromide of potassium upsets the equilibrium of *tartrate of iron*:—

Ex. 14. *Ferri tartarat.* 1 *dr., potass. bromid.* 3 *drs., tinct. chlorof. co.* 4½ *drs., syrup zingib.* 6 *drs., aqua menth. pip. ad.* 6 *ozs.; m.*

The "scale" must be dissolved separately in warm peppermint water, otherwise an insoluble coating is formed on its surface, and solution is very much retarded. It is always preferable to dissolve the scale preparation in a little hot water at the time of dispensing on account of its slow solution in cold.

Ex. 15. *Ferri ammon. cit.* 1 *dr., acid cit.* 1 *dr., tinct. aurant.* 3 *ozs., syrup aurant.* 1 *oz.; m.*

The solution of ferri ammon. cit. is troublesome; it should be dissolved in a test-tube with a drachm of water over a spirit lamp.

Ex. 16. *Ferri et ammon. cit., with potassium or sodium bicarbonate,* in solution always effervesces.

When ordered together in mixture the cork should be left out for a time to allow the carbon dioxide to escape.

Ex. 17. *Ammon. carb.* ½ *dr., spt. chloroform* 1 *dr., inf. gent. co.* 6 *ozs.; m.*

If the infusion be made with tap water the result will be that the lime mostly present in ordinary water coming in contact with the ammonia will render the mixture slightly turbid, and give a lime deposit as carbonate on the sides of the bottle.

Ex. 18. *Spt. ether nit.* ½ *oz., tinct. tolu* ½ *oz., tinct. camph. co.* 1 *oz.; m.*

If this be mixed up at random it will generally present different appearances. The principle to be borne in mind here, as in all similar cases, is that it is far easier to keep a substance in solution than it is to re-dissolve it after precipitation. In the instance before us it is evident that the substances should be mixed in the order of their percentage of alcohol, that is, the *nitre* should be mixed with the *tolu*, and *tinct. camph. co.* added, and by degrees, with agitation. This recipe also furnishes another example of the necessity of attending fully to the instructions of the Pharmacopœia, if uniformity in dispensing is to be arrived at. It would matter not how skilfully the chemist manipulated if his tinct. camph. co. were made with proof spirit—not yet extinct in chemists' shops—he could not get the bright transparent mixture this prescription should produce.

Ex. 19. Resinous tinctures (*ginger*, *nux vomica*, *sumbul*, *&c.*) when dispensed with aqueous solutions should have a "shake label" attached, especially when acids are present; so also should infusions of cinchona or cascarilla, decoction of aloes, cinchona, or sarsaparilla, or any preparation *likely* give a deposit on standing a few days. A patient seeing a sediment is always doubtful whether it should be taken or not, and a "shake label" never does harm even if no precipitate occurs.

Ex. 20. *Tinct. of guaiacum and Indian hemp* cannot be dispensed in aqueous mixture unless mucilage or a similar substance is used. The best *modus operandi* is to take a measure of muc. acacia equal to that of the tincture, dilute it with three measures of water, mix well, pour in the tincture, and gently agitate. Some extracts form a good substitute for mucilage, thus:—

Ex. 21. *Tinct. cannabis* 4 *drs.*, *tinct. digitalis* 1 *dr.*, *ext. taraxaci* 4 *drs.*, *ammon. chlor.* 4 *drs.*, *aqua chloroform ad.* 6 *ozs.* : *m.*

Rub the extract down with about 2 ozs. of water, pour in the mixed tinctures, nearly fill the bottle with aqua chloroform, and add the ammon. chlor.

Ex. 22. *Glycerine in astringent infusions.*—One par glycerine to 9 of infusion, says *The Boston Journal of Chemistry*, will render astringent infusions bright, as also gargles composed of tannic acid and infusion of roses.

Ex. 23. *Filtering* or *straining* mixtures should never be resorted to, except to remove extraneous matter, such as fragments of cork, straw, &c., &c. Mixtures containing quinine, and when a solution of the alkaloid is not prescribed, acid should not be added to dissolve the quinine; some physicians prefer administering *quinine in suspension*. When a precipitate, or separation of any kind is inevitable, it should be rendered as finely divided and easily diffusible as possible, and a "shake label" attached.

Ex. 24. In mixtures containing pulv. tragacanth and tincture put the tincture into the bottle, shake so as to cover the sides, then add the tragacanth and shake again. If no tincture be ordered with the gum put about ½ dr. to 1 dr. of spt. vin. rect. into a measure, add the tragacanth, and stir with a glass rod, then add the water, &c.

DISPENSING QUERIES.

MIXTURES.

In the *Pharmaceutical Journal* of 23rd June, 1877, the editor published the following announcement:—

> We are constantly in receipt of requests for aid in overcoming difficulties met with at the dispensing counter, and so far as lies in our power such assistance is always rendered. But it has been suggested that instead of a reply being given among the Answers to Correspondents, where frequently it stands as an individual opinion, intelligible to only one person, it would be more widely advantageous were such questions published, with an invitation for suggestions as to their solution. We therefore propose as an experiment, to devote a certain amount of space every week specially to these and other "Dispensing Memoranda." In order to assist our younger brethren as much as possible, considerable latitude will be given to the definition of what may be considered to be a difficulty, but it is evident some discretion will have to be exercised in excluding trivial matter. Each note will bear a number, which it is requested may be quoted in all correspondence respecting it. Opportunity will be taken every month of calling attention to the more important points brought out in the various discussions.

This notice was most freely responded to, and it has become a very important feature of the *Journal*. The dispensing queries and answers, however, were necessarily divided through various weekly numbers. It occurred to the compiler of the *Chemists' and Dispensers' Vade Mecum* that, if a selection of the most important of these queries with the practical solutions were brought together, they would form an instructive feature of the book, and their value for reference be considerably enhanced.

The following Dispensing Queries and Answers are principally selected from the Pharmaceutical Journal, *and the replies under the head of "The Month" are condensed from the monthly summary of current events, given under that heading, in which the able writer calls "attention to the more important points brought out in the various discussions."*

Qy. 1.—"**Radix**," *Ph. J.*, 28/6/77.—"*Tinct. ferri mur.* 1½ *dr., liq. ammon. acet.* 1½ *dr., tinct. guaiaci* 6 *dr., aqua ad.* 8 *oz.* Sent out with the 'usual appearance of a guaiacum mixture, when it was returned as made up wrongly; was afterwards dispensed at a West-end establishment, and sent out perfectly clear.' Which is correct?"

Ans.—"The Month," *Ph. J.*—"This mixture cannot be other than opaque. As to having being sent out perfectly clear by a West-end house, it is often a bugbear to dispensing houses of a smaller type. In all cases of this description, reference should at once be made to the establishment in question, that the mistake may be explained, *or the misrepresentation exposed.*"

Qy. 2.—"**K.**," *Ph. J.*, 12/9/78.—"What should be used for the first and fourth ingredients, neither being official? *Tinct. guaiaci* 2 *dr., pot. iodid.* 25 *grs., pot. bicarb.* 2 *dr., vin. s. colchici* 1½ *dr., tinct. opii* 2 *dr., aqua ad.* 3 *oz. Ft. mist. Cap. coch. mag. unam quarta quaque hora.*"

Ans.—"Dispenser."—"Should dispense the prescription as it stands. The ingredients Nos. 1 and 4 are in frequent use in most dispensing establishments. The following are the proportions for preparing them: guaiac. resin 4 oz. to 1 pint spt. vin. rect. The process the same as the B.P. tincture; colchicum seeds bruised, 2 oz.; sherry wine 1 pint, prepared by maceration for seven days."

Qy. 3.—"**J. Kitchen**," *Glasgow, Ph. J.*—"How to dispense, so as to form an attractive mixture? *Vin. ipecac.* ½ *oz., tinct. tolu bals.* 1 *oz., chlorodyne* 1 *dr., tinct. opii am.* 3 *dr., glycerini* 2 *oz.* Mix."

Ans.—"XYZ" directs—"Use dry measures: (1) put the glycerini into a 4 oz. bottle, (2) mix the tinct. tolu, tinct. opii ammon., (3) mix the chlorodyne and vin. ipecac., (4) add gradually, and shake gently between each addition, first No. 3, and then No. 2 to No. 1. A homogenous brown mixture will result, which will not separate on standing."

Qy. 4.—"**G. Welborn**," Dispensary, Grantham, *Ph. J.*, 13/1/72.—"Guaiacum mixtures are generally awkward customers. *Tinct. guaiaci* $\frac{1}{2}$ *oz., pot. bicarb.* 2 *dr., spt. ether. nit.* 3 *dr., aqua* 6 *oz.*"

Ans.—"The above mixture can be made in less than two minutes, without the resin coming out in lumps, and without a particle of it adhering to the bottle. (1) Fit a cork to the bottle; (2) weigh the potass. bicarb. and put it into the bottle; (3) add to it 4 oz. of distilled water; (4) measure the tincture and spt. of nitre together; (5) pour these into the bottle, taking care that it falls clearly into the water, &c. (this is important for ensuring a fine division of the resin); (6) immediately cork and shake for a second or two; (7) fill up with distilled water. When first made the mixture has a dirty drab appearance, changing in two or three hours to bright green. There is not the slightest adhesion of resin to the glass, and the precipitated resin is at once diffused through the liquid by agitation." It should be remarked, however, that spt. ether nit. is incompatible with guaiac. resin, but the writer of "The Month" says, "It is possible for a mixture to be chemically incompatible, yet not medicinally so, and the *intention* of the prescriber should always guide the dispenser."

Qy. 5.—"**T. W. Hatton**," *Ph. J.*, 7/7/77.—"To prepare the following without the separation of the carbolic acid:—*Acid carbol.* (*Calvert's No.* 5) 1 *oz., hyd. bichlor.* 2 *dr., aqua ad.* 8 *oz.*"

Ans.—*Ph. J.*—"C. CAMPBELL" directs—"Mix the acid carbol. (No. 5 Calvert's) well together with mucilage of gum acacia 1 oz. in a mortar, then gradually add (stirring) the water with perchloride of mercury 2 drms., previously dissolved in it. This mixture can be added afterwards to any quantity of cold water without separating."

Qy. 6.—"**An Assistant**," *Ph. J.*, 7/7/77.—"*Mistura Febrifuga.* Would 'Mist. Febrif.,' the formula for which is given in Beasley p. 285, be the correct article to dispense in the following prescription? *Liq. morphia* 1 *dr.*, *vin. ipecac.* 1½ *oz.*, *mistur. feb.* 8 *oz.* An eighth part every four hours."

Ans.—"THE MONTH."—"Here it would be proper to refer the prescription to the writer for particulars. If that be not feasible the dispenser must be guided by his own judgment, and he would do well to adhere to a simple saline composed of bicarbonate of potash and citric acid, in the proper proportions to form citrate of potash. This would be safe, and he could justify the course he had taken."

Qy. 7.—QUININE MIXTURE—"**D. Morris**," *Ph. J.*, 28/7/77.—"Can the following prescription be dispensed without the quinine separating? *Pot. bicarb.* 2 *scr.*, *pot. iodid.* 1 *scr.*, *quiniæ sulph.* 20 *grs.*, *spt. ammon. co.*, 3 *dr.*, *aqua ad.* 8 *oz.* M. ft. mist."

Ans.—"THE MONTH," *Ph. J.*—"If quinine be ordered in a mixture with soda or pot. bicarb, it should be rubbed to a powder, and mixed with the diluent, when it will remain more or less suspended, but the moment that the spt. ammon. co. is added to this mixture, the quinine will be thrown out in a resinous condition. This is one of those cases in which it is the duty of the dispenser to represent the difficulty and the incompatibility of the ingredients to the writer of the prescription, and to suggest an alteration, so that his intention may be carried out, that 'each dose should contain a definite quantity of quinine,' which cannot be the case when the greater part of the quinine adheres to the sides of the bottle."

This difficulty is in some cases prevented, and in others much modified, by the previous addition of a little mucilage.

Qy. 8.—"**W. H. R.**," *Ph. J.*, 28/7/77.—"Can the following mixtures be dispensed clear? The first has been sent out so. *Quin. ferri cit.* 1 *dr.*, *acid phos. dil.* 2 *dr.*, *liq. strychn.* 1 *dr.*, *spt. chlorof.* 2 *dr.*, *aqua dest. ad.* 6 *ozs.*; *m.*"

"No. 2.—*Spt. ammon. co.* 6 *dr., pot. brom.* 1 *dr., ferri quin. cit.* 1 *dr., tinct. aurant.* ½ *dr., aqua ad.* 6 *ozs.*; m."

Ans.—"THE MONTH."—"In the first prescription, if all the ingredients be mixed and the acid. phosphoric dil. added gradually and last, there will result a mixture slightly opaque, but in other respects perfectly satisfactory. In twelve hours a slight deposit will occur. If a ferri et quinæ cit. containing less than the proper quantity of quinine be used, a more satisfactory looking mixture may be made, but at the expense of its full medicinal value. This probably explains how it may have been sent out quite clear, but it is better to have a clear conscience and a slightly opaque mixture than an opaque conscience and a clear mixture.

"These remarks will also apply to the second mixture referred to above. If the ferri et quinæ cit. has its full quantity of quinine there will be separation of the quinine in flakes floating for a time on the surface of the mixture, and ultimately adhering to the sides of the bottle. If the sample of ferri et quinæ cit., from which the mixture is made, be deficient in quinine, the resulting mixture will show less separation."

Qy. 9.—"**Henry Dean**," Clapham, *Ph. J.*, 1/5/63. —"*Acid. phosphor. dil.* 4 *drs., ferri citrat. ammon.* 1 *dr., æther. chloric.* 1 *dr., syr. simpl.* 2 *drs., aqua ad.* 6 *ozs.*"

Ans.—"The above prescription was taken to the shop of Mr. A., who made a *thick* mixture, which was objected to by his customer, who stated that Mr. B., Mr. C., and others, had made it repeatedly, and that it was always *clear*. Suspecting the phosphoric acid he sent to the shop of Mr. B. for a small quantity, with which, to his astonishment, he made a clear mixture. On further examination, it appeared that the acid Mr. A. had used was a trifle over the strength indicated in the London Pharmacopœia, while that of Mr. B. was but two-thirds what it ought to be. The former caused a large precipitate of phosphate of iron, the latter no more than the water could hold in solution. Both chemists dealt with manufacturers of the first respectability and integrity. On repeating the experiments, I found that the weaker acid—diluted to the proper bulk—did not make a perfectly clear mixture; and further, that when the acid of full strength was used, and diluted with three parts of water, and very gradually added to the solution of the ammonio-citrate of iron in the remainder of the water, the precipitate of phosphate of iron was not nearly so great as when the acid was added undiluted; the resulting mixture was very similar in appearance to, but not quite identical with, that made with the weaker acid, a fact which shows very forcibly what is well known, how the mode of mixing may influence the result. A further source of confusion may arise from the uncertain composition of ferri citras ammon., which varies both in solubility and in the quantity of ammonia it contains. In one experiment I obtained the most satisfactory mixture by adding a few drops of liq. ammoniæ to my somewhat difficultly soluble ammonio-citrate of iron before adding the phosphoric acid. Dilute phosphoric acid is now frequently made by dissolving glacial phosphoric acid, made from phosphate of ammonia, in water; the article thus made is of course more entirely free from traces of nitric acid than that made according to the Pharmacopœia process."

Qy. 10.—Cinchonine Preparations.—"G. W. W," *Ph. J.*, 25/8/77.—"*Spt. am. aromat.* 6 *dr.*, *eth. chlor.* 4 *dr.*, *syr. cinchon.* 4 *dr.*, *vin. ferri ad.* 8 *ozs.*; m. Dispensed with different results as to taste and appearance; that sent out from the prescriber's own establishment pleasing the patient best, because, though containing a 'bulky sediment,' it was 'by far the sweetest.'"

Ans.—"The Month."—"Probably the writer of this prescription meant syrup of cinchona, or syrup of cinchona bark, not syrup of cinchonine; if so, there is no official formula for this preparation in the B.P. About the earliest formula is that in the 'Pharmacopeia Manuelis Antwerpii,' 1812:—'Recipe, cinchona coarsely powdered, 1 ounce; distilled water, 8 ounces; macerate 24 hours, express strongly, and add 14 ounces of sugar.' Brande gives ext. bark 2 dr., syr. of orange peel 2 ozs. Other writers on pharmacology give methods for making a syrup of cinchona in a more circuitous way, but as there is no official formula, and the ext. cinch. liq., B.P., a reliable preparation, is always at hand, this syrup may be extemporized by adding 1 dr. of the fluid extract to 6 dr. of simple syrup. If syrup of cinchonine be intended, there is a published form in Majendie's formulary, 1 scrup. of cinchonine and 16 ozs. of syrup, but this proportion of cinchonine is much too small to be of any value in the doses in which syrups are usually given. When a preparation is prescribed, for which there is no official or generally recognized formula, it must be expected that if the prescription is dispensed in different places it will be with different results, and as the first was sent out from the prescriber's own establishment, and pleased the patient because it was sweet, it may be accepted that the writer of the prescription succeeded in hitting the patient's taste if he did not succeed in diagnosing the patient's disease."

Qy. 11.—"**Ph. Chemist**," *Ph. J.*, 25/8/77.—This mixture assuming a different appearance, "Ph. Chemist" says, "It had been dispensed at a well-known house (whose stamp it bore), and it was a thick opaque mixture. Can this be accounted for, or what appearance ought it to have? *Potassii bromidi, ammon. bromidi aa.* 2 *dr.*, *æther chlorici* 1 *dr.*, *tinct. aurantii* 2 *dr.*, *aqua caryophylli ad.* 12 *ozs.*; m., ft. mist. A twelfth part twice a day."

Ans. 1.—"PRACTICE," *Ph. J.*—"Aq. caryophylli, and cinnamomi as well, when recently distilled, make an opaque mixture, more or less dense, according to age of water."

Ans. 2.—"THE MONTH," *Ph. J.*—"The aq. caryoph. is not in the B.P., and a dispenser would be justified in making it in the same manner and proportion as the aq. menth. pip. or aq. menth. vir. are ordered to be made, by adding the oil to the water and distilling. With aq. caryoph. thus made, this mixture would be almost clear; but if the aq. caryoph. be drawn from the cloves instead of the oil, the result will be more or less an opaque mixture, but not a *thick* opaque mixture as described. Aq. caryoph. drawn from the cloves themselves is more grateful than any one of our medicated waters, with the exception of cinnamon, with which it compares favourably, and it is to be hoped that in a future edition of the B.P. this water will take its proper place, either as an addition to, or still better, as superseding the inf. caryoph., for which it will be an efficient and elegant substitute."

Qy. 12.—"**J. B.**," *Ph. J.*, 20/11/77.—"To dispense so as to form a clear mixture without filtering it.—*Spirit æther nit.* 1 *oz.*, *bicarb. ammoniæ* 1½ *dr.*, *tinct. hyoscyam.* 1 *dr.*, *spt. camphor* 3 *dr.*, *liq. ammon. acet. ad.* 8 *ozs.*; *m.*"

Ans.—"THE MONTH," *Ph. J.*—"This quantity of spt. camph. is equivalent to 18 grains camphor, which is more than the fluid will take up; it cannot be made a clear mixture, and should not be filtered. It is not unusual for medical men to order such a quantity of spt. camph. in a mixture of this size, and as the dose is not mentioned, it is difficult to determine the intention of the prescriber in this case."

Qy. 13.—"**A Tyro**," *Ph. J.*, 1/12/77.—"What chemical change takes place in the enclosed prescription? *Tinct. opii* 2 *drs.*, *pot. iodidi.* 1 *scrup.*, *liq. hyd. bichlor.* 2 *ozs.*, *aqua menth. pip. ad.* 6 *ozs.* *M. ft. m.* 2 *oz. ex aq. ter die sumd.*"

Ans.—"THE MONTH," *Ph. J.*—"This combination cannot result in any other than an opaque mixture, followed by a flocculent deposit, and should have a 'shake label' on the bottle. A solution of iodide of potassium with hyd. bichlor. forms Mayer's test solution for the presence of alkaloids, which it throws down in an amorphous condition from very dilute solutions. In this mixture the alkaloids of opium would be thrown out of solution immediately the tinct. opium is added, as a brownish flocculent deposit, consisting of morphia, together with other proximate principles of the opium. From this it will be seen that the precipitate cannot be left out without loss of one of the active constituents of the mixture. It is an instance of chemical incompatibility without its being necessarily medicinally so."

Qy. 14.—"**H. J. H.**," *Ph. J.*, 22/12/77.—"How to make a perfectly clear mixture:—*Liq. ferri. mur.* 2 *drs.*, *liq. ammon. acet.* 4 *ozs.*, *spt. chloroform* 2 *drs.*, *aqua ad.* 8 *ozs.*"

Ans.—"Phaino," *Ph. J.*—"If 'H. J. H.' will put his liq. ferri mur. into the bottle, add the water and the spt. chlorof., shake, and then add the liq. ammon. acet., and again shake, he will have a clear mixture. Probably his liq. ammon. acet. contains excess of ammonia, which would precipitate the iron as hydrate, and of course give a cloudy appearance to the mixture."

If dispensers made a rule of ascertaining if the several preparations which enter into prescriptions correspond to the pharmacopœia standard, there would be less diversity in the same prescription being made up at different establishments.

Qy. 15.—"**Charles Stocks**," Port Elizabeth, Cape Colony, *Ph. J.*, 29/12/77.—"Thinks the *ounce* of liquid extract of ergot ordered was merely a slip of the pen, therefore only put a *fluid drachm* into the mixture. On referring to the physician I was informed that one ounce dose was intended as *per* prescription, and that there was no error on his part:—*Ext. ergotæ liq.* 1 *oz.*, *tinct. opii* 1 *dr.*, *aqua ad.* 2 *ozs.*; *m.* ½ *statim. sumend.*"

Ans.—"The Month."—"The dose of ext. ergot. liq. is called in question. The communication on the subject is not very clear. The physician when applied to is said to have stated that he very frequently gave the liquid extract in 1 oz. doses 'as per prescription.' The prescription very clearly states ½ oz. of the liquid extract every quarter of an hour, to check that hæmorrhage which now and then follows labour, and there would be no hesitation in giving larger doses if the circumstances seem to demand it. ½ oz. doses have been given in critical cases—an emergency demands bold and prompt action. Accoucheurs generally take with them a supply of liquid extract of ergot, and large doses are therefore rarely met with in prescriptions, although recognized in medical practice. It must be admitted however that a ½ oz. dose is unusual in a prescription, and it very properly attracted the attention of the dispenser."

Qy. 16.—" **An Apprentice,**" *Ph. J.*, 12/1/78.—" How to make a clear solution of the following:—*Pot. chlor.* 1 *dr., acid. salicylic* ½ *dr., spt. juniper* 6 *drs., aqua camph. ad.* 8 *ozs.* M. ft. mist."

Ans.—" THE MONTH," *Ph. J.*—" Salicylic acid is nearly insoluble in water, a clear solution cannot be made with this prescription. There being only a small quantity of salicylic acid, probably the better plan would be to dissolve it by heat in half the quantity of water ordered in the prescription, and the chlorate of potash in the other half, mix them together, and add the spirit of juniper. Let the bottle be occasionally shaken, while the mixture is cooling, and again when it is cold, the re-crystallized acid will be tolerably diffused, and there will be little difficulty with the divided doses."

Qy. 17.—" **Beta,**" *Ph. J.*, 19/1/78.—" As to the quantum of vehicle :—*Tinct. ferri perchlor.* 3 *drs., tinct. digital.* 2 *drs., aqua chloroform* 2 *ozs.* The *ad.* being omitted was dispensed literally."

Ans.—" C. F. JAMES " says—" The intention of the prescriber would have been carried out if a 2 oz. mixture only had been made, 1 dr. would not have been too much for a dose." " A. I. C." coincides with the above ; but the writer of " The Month " admitting the doubt as to the intention of the prescriber, remarks : " If the writer cannot be referred to, the dispenser has no safe alternative, but must make it up exactly as written, more especially as the error—if it be such, on the part of the writer—leans towards the lesser dose."

Qy. 18.—" **Beta,**" *Ph. J.*, 19/1/78.—" To prevent effervescence and avoid an explosive mixture :—*Pot. iodid.* 1 *dr., pot. bicarb.* 2 *drs., ferri ammon. cit.* 2 *drs., aqua flor. aurant. ad.* 3 *ozs.*"

Ans.—" NIL DESPERANDUM."—" The above cannot be made without effervescence, or rather decomposing." Squire in *Companion to the B.P.*, says, under the head of

"Ferri ammon cit. :" "Care must be taken not to put the salt of iron into the solution of bicarbonate of potash, because if it is carbonic acid will be given off, and the bottle burst."

"THE MONTH."—"If a reference be made to the characters and tests given in the formula for ferri ammon. cit. in the B.P., it will be seen that it should feebly redden litmus paper." Excessive effervescence "is inconsistent" in the above "with ferri ammon. cit. of B.P. standard." "Deviation from the B.P. standard lies at the root of a great number of dispensing difficulties. The excessive alkalinity on the one hand, or the extra acidity on the other—apparently trifles in themselves, when combined in a prescription disturb the balance, and cause endless trouble. It is incumbent on every pharmacist, whether he makes his own preparations or supplies himself from wholesale houses, to see that they correspond to the characters and tests of the B.P."

Qy. 19.—"**Apothecary**," *Ph. J.*, 23/2/78.—"Should this form a clear or turbid mixture?—*Tinct. ferri* 1 *oz.*, *liq. arsenic* 1½ *drs.*, *acid. hydroch. dil.* ½ *oz.*, *spt. chlorof.* 1 *oz.*, *syrup ferri phosph.* 1 *oz.* First dispensed clear, but by querist it turned as black as ink."

Ans.—"THE MONTH."—"Frequently difficulties occur through contamination of one or more ingredients, imperfect manipulation in the manufacture of the preparations with which the prescriptions are compounded, or deficiency in strength of the product. In no other way can the result obtained in Qy. No.19 be accounted for. Carefully dispensed, and with B.P. preparations, it is the colour of pale sherry, perfectly clear and without sediment. The pressure of tannin must be looked for to account for the inky appearance. An imperfectly washed measure will sometimes occasion such a result."

Qy. 20.—"**E. A. T.**," *Ph. J.*, 23/2/78.—"Brought by the prescriber from the patient's house, who stated the separation was not necessary, but due to some error

in its preparation :—*Quin. sulph.* 4 *grs., ac. nit. mur. dil.* 2 *drs., tinct. nuc. vom.* 2 *drs., spt. eth. chlor.* 1 *dr., syr. limon.* 4 *drs., aqua ad.* 8 *ozs.*"

Ans.—"THE MONTH."—"A medicine is occasionally sent out without any appearance of that change which subsequently takes place. This is exemplified in No. 20. The mixture, when prepared, shows a slight opacity, due to the resin of the tinct. nuc. vom., but in twelve hours or so a flocculent matter separates, and subsequently rises to the surface; the amount of flocculent matter, which is the resinous portion of the nux vomica in a finely divided state, will depend very much on the care taken in making the tincture. It is quite possible that the writer of the prescription, who may have seen such a mixture when just dispensed, would consider when he saw a flocculent separation at the house of the patient that it had not been properly prepared. The separation of this resinous matter is unavoidable, and would rather indicate that the tincture was of B.P. standard. At the same time such a result suggests a habit of observation, in order to furnish, when called upon, a satisfactory explanation."

Qy. 21.—"**A Junior Dispenser**," *Ph. J.*, 23/2/78.—"The mode of dispensing the following :—*Pot. iodid.* 80 *grs., mucilage* ½ *oz., spt. ether nit.* ½ *oz., aqua ad.* 2 *ozs.*"

Ans.—"THE MONTH."—"Through the joint action of light and air spt. ether nit. is constantly undergoing change. Whatever may be its condition when first drawn over, it very soon becomes strongly acid. In dispensing No. 21, the pot. iodid. would be at once decomposed in contact with acid spt. æther nit. In preparing this mixture it is necessary to neutralize the acid present by the addition of an alkali, pot. bicarb may be most suitable. Dissolve the pot. iodid in a little water, add the remainder of the water to the spt. æther nit., neutralize and mix with the mucilage. This mode of operation is necessary to avoid liberating iodine from the pot. iodid., or precipitating the gum from the mucilage."

Qy. 22.—"**G. S.**," *Ph. J.*, 23/2/78. — Questions the difficulty of dispensing without separation a mixture containing *tinct. lupuli*, *tinct. quinine*, *tinct. hyoscy.*, *with pot. bromid.*?—which it appears cannot be done.

Ans.—"The Month."—"The hop tincture contains tannin, and the separated portion is most probably tannate of quinine."

Qy. 23.—"**G. A. Watkins, Colombo, Ceylon,**" *Ph. J.*, 2/3/78.—How to dispense a prescription in which the vehicle has evidently been omitted. *Tinct. nuc. vom.* 1½ *oz.*, *pepsin porci* 4 *drs.*, *acid nitro.-mur. dil.* 3 *drs.*, *acid hydrocyan* 1½ *drs.*, *liq. bismuth* 2 *ozs.*, *m. ft. m.*; 1 oz. three times a day after meals.

Ans. 1.—"The Month."—"When this is the case, and the writer cannot be communicated with, the dispenser should calculate the dose of each ingredient, taking care that he keeps within pharmacopœia limits."

Ans. 2.—"Dyspepsia" suggests in the above instance that "aqua, 40 ozs." should be added, which would form the correct dose intended by the physician.

Qy. 24.—"**T. P. B.,**" *Ph. J.*, 16/3/78.—Inquires the cause of a separation which "rises to the top" of a mixture composed of *pot. bicarb.* and *decoct. Pareiræ.*

Ans.—"The Month."—"This frequently occurs with alkalies in infusions and decoctions, and should not in the above instance be interfered with, but a 'shake label' should be placed on the bottle."

Qy. 25.—"**T. F. E.,**" *Ph. J.*, 30/3/78.—In a mixture containing "magnesia" which B.P. preparation should be used?

Ans. 1.—"A. Billington" always uses the heavy oxide (B.P., page 201) when magnesia is ordered.

Ans. 2.—"E. Mann, Halifax," says that there is only one preparation designated "magnesia" in the B.P.; the other identical in composition, but, differing physically, is described as magnesia levis. The former, of course, would be the correct one to use.

Ans. 3.—"J.B.L.M." replies: "Undoubtedly, magnesia B.P., known in the trade as *Mag. Calc. Pond.*, unless the prescription was written prior to 1864, in which case the light calcined variety would be meant."

Qy. 26.—"**A. H**," *Ph. J.*, 16/3/78.—"What is the deposit in the following, and is it possible to dispense it so as to avoid it? *Quin. sulph.* 12 *grs., pot. bromid.* 3 *drs., sol. acet. bromohydric* 6 *drs., aqua distil. ad.* 6 *ozs.*"

Ans.—"THE MONTH."—"Bromohydric acid, made after Fothergill's process, contains acid tartrate of potash, and with quinine would throw down tartrate of quinine. If it be pure—the only article admissible in dispensing, there would be no precipitate."

Qy. 27.—"**Fk. Heath**, Highbury Park," *Ph. J.*, 30/3/78.—"Mr. Heath considers the following 'a puzzle:'—*Pot. iodid.* 2 *drs., ext. cinch. flav. liq. B.P.* 1½ *ozs., aqua* 1½ *ozs. Coch. min. j. bis die c. aqua.*"

Ans. 1.—"G. BROWN."—"This is a case of undue concentration, and cannot be dispensed satisfactorily, owing to the resin of the bark being precipitated. One way out of the difficulty is to send out the solution of iodide in one bottle, and the bark in another, with full directions for mixing each dose."

Mr. Brown suggests the following substitution for "this very unsatisfactory mixture:"—*Ext. cinchon. f. liq.* 1½ *ozs., glycerine, pure,* 7 *drs. Misce bene et adde solut. pot. iod.* 2 *drs., aqua* ½ *oz.; m. f. guttæ.* When 1 dr. is diluted with 1 oz. water for use it turns rather cloudy, but does not deposit for some time.

Ans. 2.—"THE MONTH."—"There is no necessity for the addition of mucilage. After moderately shaking there will be no difficulty in dividing the doses. Cinchona bark contains very little resin, and the fluid extract being aqueous, a separation of resin, as suggested, would scarcely be expected."

Qy. 28.—"**J. Kitchen**, Glasgow," *Ph. J.*, 27/4/78.—"What reaction occurs in the following? *Acid sulph. dil.* 1½ *drs., mag. sulph.* 1 *oz., liq. bismuth* 1 *oz., inf. calumb. ad.* 6 *ozs.; m.* ½ *oz.* 1 *dr.*"

Ans.—"W. H LANGBECK," *Ph. J.*—"A white precipitate is produced, consisting of citrate of bismuth. The supernatant liquid contains sulphate of magnesia, nitrate of bismuth, citrate, nitrate, and sulphate of ammonia, with infusion of calumba (the berberine of the latter combined with sulphuric acid). Citrate of bismuth is nearly insoluble, but is easily dissolved by liq. ammon., alkalies, or neutral solution of ammon. salt. The smallest quantity of free acid added to a perfectly neutral liq. bismuth will precipitate the citrate. If citrate of iron and ammonia is present, neither free acid nor alkali will precipitate the bismuth salt."

Qy. 29.—"**W. A.**, Norwich," *Ph. J.*, 23/3/78.—"In this mixture resinous quinine separates into one mass, which floats on the surface. *Spt. ammon. arom.* 6 *drs.*, *pot. bromid.* 2 *drs.*, *ferri et quin. cit.* 1 *dr.*, *aqua* 6 *ozs.* Should the solid be removed?"

Ans. 1.—"W.," *Ph. J.*—"Dissolve the pot. brom. in 2 ozs. of water, add the spt. am. arom. and 2 drs. of mucilage, then dissolve the ferri et. quin. cit. in a little water and pour into the first solution, through a small funnel, afterwards adding the rest of the water."

Ans. 2.—"This can be dispensed without any separation of quinine by first dissolving the citrate of iron and quinine in the aromatic spt. of ammon., and adding to it gradually the bromide previously dissolved in water."

Qy. 30.—"**Devonia**," *Ph. J.*, 11/5/78.—"How to dispense *resin copaibæ with syr. of gum, ether chlor., and water.*"

Ans. 1.—"Mr. GERRARD," of the University College Hospital, gives the following mode of emulsifying resin of copaibæ:—Resin 15 grs., comp. powder of almonds 30 grs., water 1 oz. Rub the resin with the almond until well incorporated, then add the water gradually.

Ans. 2.—"THE MONTH."—"Rub the resin with 1 dr. o sugar of milk, 4 drs. of powd. gum, gradually adding the water, finally the syrup with the chlor. ether. However valuable Mr. Gerrard's suggestion may be, almonds cannot be employed in a private prescription."

Ans. 3.—"S. R. CHALLIS."—"To meet this difficulty has kept prepared the following tincture, which he says 'answers very well.' TINCT. OF COPAIB. RESIN.—Copaib. resin 1 oz., spt. rect. to make up 3 ozs.; soften the resin by the aid of a water bath, and dissolve in the spt. previously warmed; contains 1 in 3. FORMULA FOR MIXTURE.—Tinct. copaib. resin 4 drs., muc. 1 oz., syr. tolu. 1 oz., aqua piment. ad. 8 oz.; m. ft. mist."

Qy. 31.—"**R. M.**," *Ph. J.*, 8/6/78.—"To form a perfectly transparent mixture:—*Ferri sulph.* 3 *grs., acid hydrocyan.* (*Sch.*) 8 *m. spt. æth. nit.* 1½ *dr., inf. cascaril.* 8 *oz.*"

Ans.—"THE MONTH," *Ph. J.*, 29/6/78.—"Dissolve the sulphate of iron in the infusion, adding the spt. æth. nit., and subsequently the acid. The tannin of the inf. slightly darkens the mixture, but there is no deposit. There is a certain amount of deposit from inf. cascaril. after being made, and if the mixture be prepared previously to this being deposited a flocculent matter will necessarily subside from the infusion itself."

Qy. 32.—"**W. F. C.**," Highgate, N., 22/6/78.—"Should the following be clear when sent out? *Ferri cit.* 2 *scr., tinct. nuc. vom.* ½ *dr., tinct. quiniæ, ad.* 2 *oz.*"

Ans.—"THE MONTH."—"Dissolve the ferri cit. in about the same quantity of water and then mix with the tinct. quiniæ. To this mixture add the tinct. nuc. vom. The result will be an opaque mixture, which, on standing, separates into two nearly equal portions, the upper clear and dark, the lower turbid. It should have a 'shake label' attached. If taken in water it becomes clear; if made with an equal quantity of water into a 4 oz. mixture it could be sent out more clear, tolerably stable, and more elegant; but this alternative must receive the sanction of the writer."

Qy. 33.—"**Sub. Umbra Floresco**," *Ph. J.*, 24/7/78.—"When *acid nitro.-mur.* is prescribed (say 1 dr. in an 8 oz. mixture, tablespoonful dose), or the following: *Acid nitro.-mur.* 1 *oz.*; X. *gtt. ex. aqua bis. die sum.* What should be dispensed?"

Ans.—"THE MONTH."—"It is quite evident the diluted acid was intended. In the present case the dispenser should for his guidance refer to the B.P. The strong acid is never prescribed, neither is it official in the B.P."

Qy. 34.—"**B. Sawyer,**" *Ph. J.*, 29/6/78.—"How to prepare the annexed:—*Ferri et quin. cit.* 1½ *drs., lithiæ cit.* 3 *drs., pot. iodid.* 2 *drs., spt. chlorof.* 6 *drs., aqua ad.* 8 *ozs.; m.*"

Ans.—"Dissolve the three first ingredients separately, add the solution of iodide of potass first to the solution of iron and quinine, and afterwards the solution of the citrate of lithia; an opaque mixture will be formed, from which there will be subsequently a very gradual separation of quinine. If the ingredients be mixed in any other form an immediate separation of quinine will result as a gummy substance which adheres to the sides of the bottle and cannot afterwards be suspended, but in the former case a little mucilage of gum will prevent the finely divided quinine agglomerating into gummy masses, and will keep it fairly suspended."

Qy. 35.—"**F. J. S.,**" *Ph. J.*, 24/8/78.—"How to dispense the following:—*Tinct. ferri mur.* 2 *drs., tinct. opii* 1 *dr., tinct. benz. co.* 3 *drs., p. gum camph.* 1 *dr., p. trag. co.* 4 *drs., bals. copaib.* 1 *oz., aqua ad.* 8 *oz.*"

Ans.—"THE MONTH."—First, make the p. trag. co. into a thick mucilage, using the mortar for this purpose; then add gradually, with constant stirring, the balsam, adding at intervals also a little water to form an emulsion. Put the camph. into the three tinctures mixed together; when dissolved add to it as much water as the solution will take up without precipitation, then gradually pour this with constant stirring into the previously made emulsion of copaiba. If the tinct. be added without dilution to the emulsion a separation will take place and the mixture be spoilt. It should be of a light brown colour, a perfect emulsion, and showing no sign of separation. J. Kemble, of Mevagissey, says: 'I have succeeded by the following method:—first, powder the camphor with the aid of a few drops of spirit, mix the p. trag. co. with this, and then add 1½ oz. of water to form a mucilage; with this incorporate first the tinct. benz. co., and then the bals. gradually in small quantities, stirring well between each addition, and adding a little water as it thickens; next add tinct. opii, previously diluted with a little aqua;

and, lastly, tinct. ferri mur., diluted with 2 oz. of aqua. The addition of the last ingredient causes the mixture to gelatinize, but after standing some hours, with occasional stirring, this gets sufficiently liquid to pour into the bottle. The mortar can then be cleaned with the remaining aqua. Label it 'shake the bottle.'"

Qy. 36.—"**Keppa**," *Ph. J.*, 31/8/78.—"The cause of the colour in this mixture? *Sod. salicylas, spt. æth. nit., spt. ammon. co., aqua dest.*, turns orange colour."

Ans.—"THE MONTH."—"The change of colour is due to the action of the acid more or less present in the spt. æth. nit. on the salicylate of soda. If the acid be first neutralized with the spt. ammon. arom., and then added to the soda, no change of colour will take place."

Qy. 37.—"**Alkaloid**," *Ph. J.*, 31/8/79.—"What appearance should this mixture have? *Sol. Donov.* 1½ *drs., tinct. opii* 3 *drs., æth. chlor.* 2 *drs., ferri et quin. cit.* 1 *dr., aqua cin. ad.* 8 *oz.; m.*"

Ans.—"THE MONTH."—"Donovan's solution with tinct. opii and quinine will throw down a deposit of the alkaloids. The precipitate in this instance is due to morphia and other proximate principles of opium, which, with the quinine, have been thrown down by the iodide of mercury in Donovan's solution."

Qy. 38.—"**A. V. O.**," *Ph. J.*, 7/9/78.—"To make a clear mixture? *Pot. brom.* 100 *grs., pot. bicarb.* 80 *grs., quin. disulph.* 20 *grs., syr. zing.* 6 *drs., aqua menth. pip. ad.* 8 *ozs.; m.*"

Ans.—"THE MONTH."—"The quinine in this instance must be reduced to a fine powder by rubbing it with the potash, and consequently the mixture will not be clear—the quinine being diffused but not dissolved. If the quinine be dissolved by a little dilute sulph. acid, it will be again thrown out of solution on the addition of an excess of alkali."

Qy. 39.—"**W. W. B.**," *Ph. J.*, 21/9/78.—"To make a clear mixture? *Ferri et quin. cit.* 3 *drs., tinct. valer. co.* 6 *drs., aqua pur. ad.* 12 *ozs.; m.*"

Ans.—" J. Green."—"By adding a 50 per cent. dispensing solution of citrate of iron and quinine gradually to the tinct. valerian, previously diluted with the rest of the water, in a bottle sufficiently large, and skaking vigorously, a moderately transparent solution may be effected, containing, however, a slight precipitate of quinine diffused through it."

Qy. 40. The following is from the *New York Druggists' Circular, &c.:* " *Citrate of iron* 30 *grs., sulph. of iron* 20 *grs., quinine* 40 *grs., nitric acid* 15 *drops, simp. syr.* 4 *ozs., oil of sassaf.* 10 *drops ; m.* Dose a teaspoonful."

Ans.—" Ed. *D. C.*"—" In a small porcelain capsule place the sulph. of iron, powdered ; add to it the nitric acid, and heat the whole gently until red fumes are no larger evolved. Then rub the quinine, the sulphate we presume, in a mortar, and add to it the acid ferric solution, and one ounce or two of the syrup. Now dissolve the citrate of iron in two or three times its weight of boiling water, add it to the remainder of the syrup, and mix the two solutions. The result ought to be a mixture of a light garnet colour. Finally add to it the essential oil dissolved in a small quantity of alcohol, which renders it slightly cloudy. This mixture much resembles 'Gadbury's Spleen Mixture,' well known in the Southern and Western States."

Qy. 41.—"**J. W. Savage,**" *Ph. J.*, 21/9/78.—" Should this have a 'shake label' on the bottle or not ? *Sod. bicarb.* 1 *dr., vin. opii.* $\frac{1}{2}$ *dr., liq. bismuth* 1 *oz., spt. ammon. arom.* $1\frac{1}{2}$ *drs., spt. chlorof.* $1\frac{1}{2}$ *drs., aqua calcis ad.* 6 *ozs.; m.*"

Ans.—" The Month."—" In whatever order the ingredients are put together a precipitate of carbonate of calcium will result. When a deposit forms as the necessary result of the combination properly put together, there should always be placed on the bottle a 'shake label.' The patient is thus informed that the precipitate is a necessary result of the combination and not unexpected by the dispenser, but one for which he is in a position to offer a satisfactory explanation." " T. Green," however, says : " The mixture may be prepared so as to form a soluble, and, perhaps, permanently clear solution, by dissolving the soda bicarb. with the liquor bismuth, adding the whole of the liquor calcis, and lastly the other ingredients. The balance of power is, however, so even that perhaps a straw might disturb the equilibrium, for if prepared with Schacht's solution the mixture is quite turbid, owing to the fact that this solution contains less ammonia-citrate of bismuth and no nitrate of ammonia to form a soluble combination with the soda and lime."

Qy. 42.—"**Puloimes,**" *Ph. J.*, 28/9/78.—"What rule is followed when mucilage q. s. is ordered? *Bismuth trisnit.* 1½ *drs., sod. bicarb.* 1½ *drs., mist. acac. q.s., inf. gent. co., ad.* 8 *oz.; m.*"

Ans.—"SUB. UMB. FLORESCO."—"Puloimes will find 6 drs. of muc. acac., B.P. (mist. acac. E.P.) sufficient to suspend 1½ drs. of bismuth subnit."

INCOMPATIBLE MEDICINES.

UNDER this heading *The Chemists' and Druggists' Diary* gives some excellent remarks, from which the following is abridged :—

Medical men are rarely good chemists, hence the necessity of the dispenser being able to check the prescriber's combinations. Many decompositions are intentional, such as in mist. ferri co. B.P., or in the frequent combinations of tinct. opii., or ext. opii. liq., with liq. plumb. subacet. for injections, also in the following:—*Ext. conii* ½ *oz., liq. plumb. subacet.* ½ *oz., aq. ad.* 6 *ozs.; m. ft. lot. modo dictu utend.* This forms a creamy solution with an abundant precipitate, and necessitates mixing half the water with the extract, and the remainder with the liquor before mixing, or a disagreeable lumpy mixture is produced. Such combinations require a "shake label."

The following, however, are errors in prescribing :—No. 1.—*Quin. sulph.* 12 *grs., acid hydrobrom.* 4 *drs., pot. bromid.* 1 *dr., tinct. lavand. co.* 3 *drs., sodæ salicyl.* 1 *dr., aqua* 9 *ozs.; m. ft. mist.* No. 2.—*Sodæ. sulph.* 15 *grs., pot. cit.* 1 *scr.; m. ft. pulv.* 6. No. 3.—*Zinc. sulph.* 1 *dr., plumb acet.* 2 *drs.; m. ft. pulv. mod. dict. utend.*

In the first case the salicylate of quinine produced cannot be rendered readily diffusible: pulv. trag. co. 1½ dr. was therefore added previous to the decomposition. In the other two cases metathesis takes place, the water of crystallization of the sulphate is liberated, and the mass becomes wet. The use of an equivalent quantity of the dried salt removes the difficulty.

Pot. iodid. ½ *dr., tinct. camph. co.* 6 *drs., syr. scillæ* 6 *drs., spt. eth. nit.* 2 *drs., aqua ad.* 6 *oz.* Although the spt. eth. nit. was neutralised, iodine was liberated by the benzoic acid of the tinct. and the acetic acid of the syrup. Such could not be dispensed. Also with the following:—*Pot. chlor.* 2 *drs., syr. ferri iodid.* 6 *drs., vin. antim.* ½ *dr., ether chlor.* 2 *drs., aqua ad.* 8 *ozs.* This is almost colourless when first made, but soon turns a reddish-brown, and in a few days crystals of iodine are deposited, due to the action of chlorate of potash on ferrous iodide; ferrous iodate being formed, which splits up into basic iodate and free iodine. The chemist will have to use his discretion as to whether the decomposition is of sufficient importance to refuse dispensing.

Incompatible mixtures are sometimes the result of impurities in the drugs used, thus:—*Sod. hyposulph.* 1 *oz., acid sulphurous* 1 *dr., aqua rosæ ad.* 8 *ozs.* This acid invariably contains some sulphuric acid, which throws out sulphur from the hyposulphite. *Quin. brom.* 12 *grs., potas. brom.* 1 *dr., aqua ad.* 3 *ozs.* Brom. potas. frequently contains a trace of carbonate, which occasions a precipitate of pure quinine. The bromide of quinine should be dissolved in a greater part of the water (warmed if necessary), and a neutralised solution of the bromide of potas. added to it.

Citrate of Potash.—If this is alkaline, it assumes a damp appearance, and aggregates in lumps; but if acid, it seems dry and pulverulent.

Alkaloids.—Whether alone or as salts, are nearly all precipitated from their solutions by tannic acid, and also by various astringent vegetables containing it.

Almond Emulsion is separated by alcohol, tinctures, oxymel and syr. squills, spirit of nitre, hard water, and cream of tartar.

Calomel is decomposed by alkalies, alkaline earth, and their carbonates, sulphides, hydrocyan. acid, bitter almonds, lime water, iodid. of potass, iodine, soap, nitric acid, salts of iron, lead, and copper, nitrate of silver, &c. Be careful not to use *soap* in pills containing calomel.

Chlorides are incompatible with nitrate of silver.

Chloroform.—If in a mixture containing opium or its preparations, well dissolve the narcotine, which, unless perfectly mixed, may cause an overdose to be given.

Cochineal is precipitated by salts of zinc, bismuth, and nickel, in a lilac powder; iron gives a dark purple, tin a brilliant scarlet, and alumina the lakes.

Iodide of Potassium is decomposed by all acids, and acidulated salts, except cream of tartar, and most of the metallic salts. If spirit of nitrous ether is ordered in a mixture with it, the former must be carefully neutralised before it is used.

Bromide of Potassium is also like the iodide, decomposed by acids, chlorides, and metallic salts.

Iron Salts.—A sesquioxide is generally thrown down by alkalies and alkaline carbonates; Prussian blue is formed by ferrocyanide of potassium; a precipitate of sulphur is yielded by sulphuretted hydrogen; tannin, and vegetable tinctures, or infusions containing it, form with iron the basis of black ink.

Nitrate of Potash is decomposed by most of the sulphates, and forms a double salt with alum.

Plumbi Acetas and its *liquor* are incompatible with preparations of opium, the vegetable astringents, soap, milk, or albumen. It is decomposed by sulphuric, hydrochloric, citric, and tartaric acids. Iodide of potassium causes a yellow, sulphuretted hydrogen a black, the carbonate alkalies a white, and chromate of potash a lemon yellow precipitate.

Solution of Potash, with acids, ammonias, iodides, and with vegetable infusions containing an alkaloid principle. Strychnine is precipitated from solution of its salts by potass. or carbonate of soda.

An Incompatible Mixture.—The following prescription was the subject of a paper read at an evening meeting of the Pharmaceutical Society, November 2nd, 1881, by Mr. W. Martindale, to whom it was handed by Dr. Paul for investigation. *Hyd. perchlor* 2 *grs.*, *pot. iodid.* 2 *drs.*, *spt. chloroform* 1 *oz.*, *tinct. cinchonæ* 1 *oz.*, *quinine sulph.* ½ *dr.*, *aqua* 2 *ozs.*; *m.* After investigation, Mr. Martindale states: "The prescription is thoroughly incompatible, but not so incompatible but that with an addition the difficulty may be overcome thus. The sulphate of quinine is rubbed with 1½ oz. of glycerine, in place of as much water, the iodide added, then the tinct. of cinchona and spirit of chloroform, lastly the perchloride of mercury dissolved in ½ oz. of distilled water. No precipitate is formed, except what is immediately re-dissolved. The mixture is only slightly opaque, owing to some of the resinous matter of the tincture of bark separating. The addition of glycerine answers better than that of mucilage, and its sweet taste would scarcely be noticed in the presence of spirit of chloroform. Both additions are so harmless that the dispenser would be justified in using either, letting the prescriber know he had done so afterwards, supposing personal communication with him previously to be impossible." At the discussion on the paper, any addition or alteration in prescriptions by pharmacists was opposed by Mr. Postans and Mr. Robins, but Mr. Martindale was supported in his opinion by Mr. Gerrard, Mr. Carteighe, Professor Attfield and the President of the Pharmaceutical Society. In reply to the remarks made by the above-mentioned gentlemen, Mr. Martindale summed up by saying: "It was the duty of the dispenser not to break faith with the physician, and if he were to tell the patient at once that the prescriber had written an incompatible mixture, and that he could not make it up, what faith would the patient have in the physician or dispenser? It was their duty always to support the medical profession, but they expected that to be done reciprocally, and he hoped medical men would defend them when these incompatibilities were met with. The onus of dispensing this mixture would rest jointly on the dispenser and the prescriber, and it should be sent out in such form that each dose would contain an equal quantity of each ingredient. That was the main point, and when it was not possible to get it in divided doses, some little addition must be made. It would not be noticed at a glance at this prescription that it was incompatible, and that it could not be given in divided doses; that would only be discovered in dispensing it. In the above mixture it was the affinity of the chloroform for the precipitate which caused the incompatibility. Where they were to draw the line in making additions to a mixture must be left to circumstances. He considered the addition of glycerine or mucilage was admissible just as in the pill mass, either excipient was admissible to make it hold together, and when an occasion like the present arose, and the dispenser had no opportunity of consulting the prescriber, and the mixture urgently required, he was bound to do his best."

PILLS AND THEIR EXCIPIENTS.

INTRODUCTION.

Condensed from the CHEMISTS' AND DRUGGISTS' DIARY.

As far as possible, pills should be sent out the weight prescribed. When no excipient is ordered the simplest should be used, and that which gives least increase to the size of the pills. For substances insoluble, or nearly so, in water, and entirely devoid of adhesive property, such as *quinine*, *oxalate of cerium*, *salicylic acid*, *valerianate of zinc*, *&c.*, 5 per cent. of tragacanth powder should be well incorporated, and the mass made rather soft with syrup, or confection of hips, thinned by addition of an equal weight of syrup. The objection to tragacanth on the ground of subsequent cracking is without foundation.

Many substances do not require an adhesive excipient, *e.g.*, *the ext. aloes.*, *pulv. pil. col. co.*, *p. ext. col. co.*, &c., form a good mass with water (about 4 m. to 1 dr.); *p. pil. assafœt. co.*, *p. pil. hyd. subchlor. co.*, *jalapin*, *iridin*, *euonymin*, and similar bodies are readily massed with spt. vin. rect. In either of these cases a slightly warmed mortar should be used.

Pil. aloes et ferri gets exceedingly hard in a short time, and should be kept in powder, omitting the confection, and adding ½ oz. of p. glycyrrh. to the B.P. quantities; then, 2 of the powder = 3 of the mass.

Sugar of milk in crystals is useful for dividing any active ingredient when making pills ; the powder is inferior for this purpose.

Pills containing much aloes, colocynth pill or extract, assafœtida, or galbanum, being so liable to fall, should be rolled on a warm iron slab.* Black pitch, solid Chian turpentine, and some other substances hard and brittle in the cold, may be rolled and made into pills by this means, without addition of a liquid excipient, nor do they require fibrous material, such as liquorice powder, to prevent falling.

Bals. Peru.—Bread-crumb, or scraped wax are good excipients. When the balsam is in large excess, half to one-third its weight of calcined magnesia should be added, and allowed to stand for some hours.

Benzoic Acid.—Glycerine 1 gtt. to each 5 grs.

Copaiba.—Use half its weight or less of slacked lime, then combine with the other ingredients.

Canada Balsam or Tar.—Liquorice powder or magnesia.

Camphor.—Should be finely powdered, and massed with a tenacious ext., or p. trag, and thin conserve, or soap and castor oil may be used. *Spirit* to be avoided unless a large proportion of resinous body be present, thus :—*P. zinci ox.* 12 *grs., p. camph.* 6 *grs., ext. belladon.* 3 *grs., make* 24 *pills.* This forms a good mass with spt. vin. rect. Camphor pills should always be kept in a bottle.

Calomel.—Calcined mag. must not be used in a pill containing calomel, as it forms therewith a black oxide.

Camphor and Hyoscyami.—Powder the camph. with a little water instead of spt. vin. rect., it will then make a good plastic mass with the henbane, retaining its consistence for some time.—*Dr. Symes.*

Carbolic Acid.—Powdered soap 1 part, p. liquorice 5 parts, mix : 3 grs. of this will take up 1 gr. carbol. acid, or 1 minim creosote, or ess. oils, and make a firm pliable mass. 2 grs. bread-crumb will make a mass with 1 gr. cryst. carbol. acid, or 1 m. creosote, or wheaten flour and simp. syrup may be used.

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* *See* "Aids to Dispensing," page 12.

Creosote.—Mr. Martindale recommends p. animal soap B.P. Mix well the soap and creosote in *p. e.* in a wide-mouth stoppered bottle, and digest in a water-bath till they combine. This, on cooling, forms a plastic mass, and can be combined with other ingredients, preferably powders.

Ess. Oils.—When ess. oils are ordered with aloes, ext. aloes pil. or ext. col. co., pil. assafœt. co., &c., these, in fine powder, should be triturated with the oil for a few minutes, the remaining ingredients, if any, added ; then, if too hard, use spt. vin. rect., or, on the other hand, p. glycyrrh q.s. Aqueous excipients should be avoided in the presence of oils.

Essential Oils frequently form good excipients, as in the following :—(A) *P. hyd.* 4 *grs., p. ext. col. co.* 6 *grs., podophyl.* ¼ *gr., ol. anthem.* 1 *min. ; ft. pil* 2. (B) *P. pil. aloes et ferri, p. guaiaci res. aa.* 1 *dr. ; ol. sabinæ* 15 *min. : ft. pil.* 24. (C) *Ext. nucis vom.* ¼ *gr., creosote* 1 *min., assafœtida* 3 *grs., p. glycyrrh.* 2 *grs. ; ft. pil.* (D) *Ext. hyoscy.* 1 *gr., p. pil. coloc. co.* 4 *grs., ol. cajeputi* 1 *min. ; ft. pil.* In a pill with a large quantity of ess. oil, it sometimes saves trouble to rub the oil with a few grs. of magnesia before adding the other ingredients.

Croton Oil—with crumb of bread as excipient. N.B.—A fairly good substitute for bread is equal parts flour and conf. of rose.

Crystalline Salts.—Soluble in water, require a little care. They should be very finely powdered and massed with thin conserve, adding, if necessary, a little tragacanth. If silvered, they must be varnished with tolu, and allowed to dry before using mucilage, or else silvered with the varnishing solution alone. (A) *Pot. brom., ferri sulph. aa.* ½ *dr., ext. nucis vom.* 2½ *grs., ext. gent. q.s. ; ut ft. pil.* 15. In this formula a metathetical reaction takes place between the two salts, the water of crystallisation in the sulphate of iron being liberated; consequently a very small quantity of ext. suffices. Since bromide of iron is formed, the pills should be varnished and sent out in a bottle. (B) *Pot. iodid.* 24 *grs., pil. rhei. co.* 48 *grs. ; ft. pil.* 24. The pill mass should be made rather soft with a few drops of water, if required, before the powdered iodid. is added. (C) *Ferri sulph. exsic.* 1 *dr. ; ft. pil.* 20 *in argent.* This makes a good mass with 4 grs. trag. and 2 scrup. of thin conserve. (D) *Quin. sulph.* 24 *grs., ferri sulph. ex.* 24 *grs., ferri arseniat.* 1½ *grs., ext. nucis vom.* 6 *grs., ferri iodid.* 48 *grs.*; *ft. pil.* 24, *varn. c tolu.* (E) *Ferri iodid.* 72 *grs., sulph. precip.* 48 *grs., ferri. arseniat.* 1 *gr., ext. gent. q.s.*; *ft. pil.* 24. These formulæ are troublesome. The iodide of iron (in good condition, *i.e.* recently prepared) should be powdered in a warm mortar, the other ingredients added, together with 6 or 8 grs. ext. gent.; the whole to be vigorously worked together until it becomes plastic, rolled quickly, varnished, and enclosed in a bottle. It is remarkable that so little ext. suffices for a mass, which from the formula appears to have no adhesive component. (F) If *ferri sulph., zinci. sulph.,* or *sod. carb.* are ordered in pills the following dried equivalent may be used :—ferri sulph. exsic. 5=8; zinci. sulph. exsic. 5=8; soda carb. exsic. 7=19; for this latter soap may be used, and it is more manageable by heating the bicarbonate than the carbonate.

Ferri Sulph.—Glycerine and trag. jelly is the best for pills containing *aloes* and *ferri sulph., exsic.,* or *cryst.*

Ferri et Quin. Citras.—Good pills, which keep their shape, and do not deliquesce, can be made by using unguentum resinæ. Some of the makers of scale preparations supply a specially prepared citrate of iron and quinine for pills, made without ammonia. Pills made with this are more easily kept, but it would not be legitimate to use the preparation in ordinary dispensing.

Ferri Bromidum.—The Société de Pharmacie de Paris recommends a hot strong solution of the bromide to be mixed in a dry warm mortar, with liquorice powder and gum arabic in equal parts, q.s. to make a mass. The pills should be rolled in lycopodium, or better, coated with sugar and gum, and preserved in well dried bottles.

Ergotine.—When in excess to make a suitable mass, the ergotine should be evaporated to a pilular consistence. These pills should be put into bottles, as they absorb moisture.

Ext. Cannabis Indic.—Equal parts of p. trag. co., and mag. calc.

Fel. Bovin.—Dry over steam bath till it can be powdered, allow for waste, and form pills with mucil.-gum trag.

Gallic Acid.—With $\frac{1}{8}$th its weight, **Tannic Acid,** $\frac{1}{4}$th its weight of glycerine.

Guaiacate of Lithia.—Powder finely and use spt. vin. rect. 8 min. to 1 dr., a *soft* mass should be made; a slight warmth will be found of advantage.

Hydr. c. Cretæ.—Must not be vigorously worked, or mercury separates; thin conserve or soft extract, the excipient. If prescribed with powders, or powdered pill masses, the hydr. c. cretæ should be first carefully incorporated, then there is less chance of separation.

Pepsine.—Half its weight of glycerine.

Phosphorus.—Dissolve in a mortar, with a few drops of carbon bisulphide. Oil theobromæ should be added to the solution, thoroughly mixed, and some absorbent material such as p. trag. co. or bread-crumb added and quickly made into a mass and divided into pills, and varnished. Phosphorus pills made with cocoa-butter only dissolve so readily that the phosphorus causes unpleasant eructations; the addition of a small proportion of Canada balsam obviates this. A drop of oil of cloves added to the carbon bisulph., Mr. Proctor says, lessens its tendency to inflame. Phosphorus pills to be varnished.

Pil. Aloes c. Myrrh.—Glycerine 1 part, treacle 3 parts.—*G. Welborn.*

Pil. Hydrarg.—When ordered with soft ext. the latter should, if possible, be dried, or used in powder.

Pil. Rhei. Co., and **Pulv. Pil. Col. Co.**—The mass may be made up to the full weight with sugar instead of treacle.

Pulv. Rhei.—Use proof spirit or tinct. rhei. (1 m. to 3 grs.); a soft mass should be made and rolled quickly, or it is troublesome. A similar precaution is necessary for pepsin porci (excip.: 1 m. glycer. to 2 grs.) Only 24 pills should be made at a time, as the mass spoils and becomes leathery.

Quinine.—Glycerine and conf. rosæ.

Quinine Sulphate.—Tartaric acid (2 grs. to 20 grs. quinine) with 1 drop water. Glycerine and trag. answer well, but make larger pills, and conf. of hips makes them still larger. The following is recommended by H. P. Reynolds in *Amer. Journ. Pharm.*:—*Sulph. of quinine* 600 *grs., tart. acid* 100 *grs., glycerine* 75 *mins.*—Rub the quinine and the acid together to a fine powder, add the glycerine, and continue the trituration till the powder becomes adherent, when it should be beaten into the proper form for handling, and divided into pills. The mass is firm, solid, rolls well, and does not set for some hours. They will be found quite small for their weight, and very white if rolled in starch powder, and however dry or old they remain perfectly soluble.

Soap.—If much be present, water is better avoided. Spt. vin. rect. when admissible forms a more controllable mass; it should be made soft.

Calcium Phosphate possesses the property of giving to greasy substances a good pilular consistence, when added in comparatively small quantity.

Conf. of Roses and Hips increase the bulk too much.

Decoct. Aloes Co. is useful where a considerable quantity of oil has to be combined with a rather soft mass.

Glycerine alone is not a good excipient, the pills absorb moisture, and do not silver well.

Mucilage pills become too hard in time.

Spirit should not be used when much resin is in the pill, and when used the mass should be rolled quickly or they will crumble.

Tragacanth gives solidity and elasticity to soft masses, but if too much be used the elasticity prevents them being rounded with the finisher.

Trag. and Glyc. is the best for salts and metallic oxides, such as pot. bromide and bismuth subnitrate; the mass should be well kneaded, or more of the excipient will be used than is necessary.

Trag. Excip.—*Pulv. trag.* 1 *oz.*, *glycer.* 4 *ozs.*; or (as proposed by G. Welborn) *p. trag.* ½ *oz.*, *glycer. and water of each* 2¼ *ozs.*, *ol. pimento* 5 *drops.*

Wax Shavings with a little soap, where not incompatible, is the best excipient for essential oils, carbolic acid, and creosote.

PILL COATING.

Albumen and Sugar.—Pills to be coated should be be as hard as possible, then rolled between the finger and thumb with sufficient albumen to give them a thin coating, afterwards rotated in finely powdered sugar, or a mixture of French chalk and sugar. Mucilage or syrup may be used instead of white of egg; they are finally transferred to a warm pill tray and kept rapidly rotating until dry and smooth. The operation takes but little time.

Sugar.—Place the pills well dried in a tinned copper bowl with a flat bottom, or an enamelled iron dish, the surface of which has been moistened with syrup or syrup and gum. They are then rotated and gently heated, very finely powdered sugar dusted on, and the motion kept up till a perfectly dry, hard and white coating is obtained. This requires dexterity, only to be acquired by practice. This is an adaptation of the confectioners' process for sugar-coating almonds, &c.—*Dr. Symes.*

Tolu and French Chalk.—Introduced by Dr. Symes in 1860. The resin left after making syrup of tolu is dissolved in ether, sp. gr. ·717 to ·720. The pills are rolled in this, and while still moist are transferred to a box containing finely powdered French chalk, then turned into a warm pill tray and kept rotating for a short time. Finally, polished with slight pressure under a pill finisher. The result is a steel grey smooth coating. Felix Stevens, in *Phar. Journ.* gives the following formula: Resin 30 grs., bals. tolu 20 grs., ether sulph. 1 oz. The writer of "The Month," *Phar. Jour.*, observes that: "One objection seems to apply to the tolu varnish coating, it cracks and exposes the uncovered surface of the pills."

Gelatine and Gum.—In the *Journal of Pharm.* Mr. H. Dymock suggests the following:—Dissolve 6 drs. of gelatine in 1 dr. of granulated gum arabic in 14 drs. of acetic acid No. 8, with the aid of a water bath; add 1 oz. of spt. of nitrous ether and 5 min. of oil of gaultheria, and mix. Make the mass a little softer than usual; use as little powder as possible in rolling out. When the pipe is nearly long enough for cutting, cut a slit along the pipe, lay in a piece of fine thread to reach over the sides of the machine. Roll to full length and cut off the pills, which, with practice, can all be kept strung on the thread; shake off any powder adhering to the pills, and dip them into the coating solution, twirl the thread to throw off all excess of coating, and hang up to dry. It requires some practice to secure good and speedy results by this method,

Cacao Butter as a Coating for Pills.—M. Ditten, Apothecary at Christiania, Norway, recommends cacao butter as a coating for pills, and proceeds as follows:—"A small quantity of cacao butter is melted in a very flat capsule, if possible one with entirely flat bottom, the pills are quickly rolled in it, then at once thrown into a sufficient quantity of powdered starch, and allowed to cool. They will be found coated with a completely isolating air-tight layer, which protects the mass from all influence of air and moisture, and prevents evaporation of volatile ingredients. The coating keeps well, is almost tasteless, and possesses to a certain degree the agreeable aroma of chocolate."

Varnish for Pills.—Sandarac 1 oz., ether 3 ozs.; or common amber resin 1 or 2 drs., spt. of turpentine 1 dr., absolute alcohol 1 oz.; 20 min. of any essential oil may be added. The insoluble nature of these varnishes would, however, hardly recommend them.

Cartner's Pill Coating Machine.—This is a very simple mechanical contrivance by which a cylinder, holding the pills, is made to revolve with perfectly regular motion by means of two cog wheels, turned by a small handle. Whatever material may be used for pill coating, this machine will enable the operator to accomplish the work with facility and finish. The *modus operandi* of working it is sent out with each machine, and they are manufactured of different sizes and prices by Messrs. Harvey, Shepherd & Co., Charterhouse Square, E.C.

DISPENSING QUERIES.

PILLS.

The following Queries and Abridged Replies are chiefly selected from the PHARMACEUTICAL JOURNAL :—

Qy. 1.—"**J. A. Jeffrey**, Pitville, Cheltenham," *Ph. J.*, 26/10/72.—"*Creosote* 20 *min.*, *pot. chlor.* ½ *dr.*, *rhei pulv.* ½ *dr.*; *ft. pil.* 20 *in fol. arg. involve.* Required to be small, hard, and contain the full quantity of creosote."

Ans. 1.—"THE MONTH."—"The addition of one grain of oil of theobroma will have the desired effect, and form a hard, compact mass. In all cases where creosote is ordered in pills along with dry powders, it will be found useful, as creosote and it are miscible. The above will require careful manipulation; on trituration, the oil of theobroma will soon become plastic, but the mass should not come in contact with the warm hand, or the pills be kept in a warm place. The silvering should be done by means of a little thin mucilage, in which the pills should be rolled in a gallipot, so as to get them well moistened and partially dried before placing them upon the silver leaf."

Qy. 2.—"**Dispenser**," *C. and D.*, 15/10/73.—"*Chloral hydrate* 60 *grs.*, *pulv. tragacanth* 3 *grs.*, *soluble cream of tartar* 12 *grs.* Divide into 20 pills."

Ans.—"ED. *C. & D.*"—"Chloral hydrate in pills is an awkward substance. The above formula produces an elegant pill."

Qy. 3.—"**M.**," *Ph. J.*, 11/8/77.—"*Quin. sulph.* 6 *grs.*, *ferri sulph. sic.* 12 *grs.*, *aloes barb.* 2 *scr. p. capsici, q.s. et divid. in pil.* 12."

Ans.—"THE MONTH."—"Three grs. of capsicum in one doz. pills is quite usual. It may be accepted as a useful and practical fact that when ferri sulph. either dried or otherwise is prescribed with aloes, there is no better excipient than glycerine and tragacanth. The querist subsequently stated 'We dispensed the above with p. capsici 6 grs., and made the mass with glyc. and trag.'"

Qy. 4.—"**X. Y. Z.**," *Ph. J.*, 11/8/77.—"To prevent pure *ox-gall pills* from falling after being made a day or two."

Ans.—"H. C. Baildon."—"Dry the ox-gall over a steam bath until it will rub down into powder. Allow for loss in weight, and make into pills with trag. mucilage."

Qy. 5.—"**F. S. Morton**," *Ph. J.*, 29/9/77.—"What is the dose of ergotine? *Hyd. bichl.* $\frac{1}{12}$*th gr., ergotine* 3 *grs., ext. belladon.* $\frac{1}{4}$ *gr.; ft. pil., mitte* 12."

Ans.—"The Month."—"The doses of each ingredient here ordered are those commonly prescribed, and there is no difficulty in making a satisfactory pill by first evaporating the ergotine to a pilular consistence. Pills containing this drug should be sent out in a bottle, as it readily absorbs moisture."

Qy. 6.—"**H. R. M**," *Ph. J.*, 17/11/77.—"*Ferri redacti.* 3 *grs., ext. bellad.* $\frac{1}{8}$*th gr., bals. Peru.* 1 *m.; ft. pil., mitte* 12."

Ans. 1.—"The Month."—"These pills may be satisfactorily made by the use of a little bread-crumb."

Ans. 2.—"J. Whitfield."—"Where bals. Peru is ordered in pills it answers well to combine it with a little beeswax."

Qy. 7.—"**H. Cumber**," 12/1/78.—"The size or number of pills? *Ext. hyos.* 3 *grs., p. rhei co.* 4 *grs.; ft. pil. cap. j. h. s. s. mitte* 12."

Ans.—"The Month."—"Probably the prescriber had no idea of the size of a 7 gr. pill, and if not convenient to be referred to, the pill may be made up 7 grs. each, and a note sent with them to the effect that the pills as written were larger than those usually prescribed, but if it were desired, they could be divided so that two should represent the dose. Something to this effect would place the dispenser right in the patient's estimation, and at the same time would not compromise the medical man. Very large pills are sometimes sent out without a remark of any kind. J. C. says this prescription is open to another construction, the figure two may have been omitted after 'fiat pil.;' if so, this would make four ways that this formula might be dispensed, and suggested that (reference to the prescriber being impracticable) the first dispenser should make a rule of writing on the prescription the same memoranda that he makes in his own prescription book, for the guidance of the next person that may be called upon to dispense it."

Qy. 8.—"**A. P. S.**," *Ph. J.*, 27/10/77.—"Should the double sulphat. B.P. be used? *Alum sulph.* 2 *grs.*, *bismuth subnit.* 2 *grs.*, *ext. gent. q.s.; ft. pil.*"

Ans.—"THE MONTH."—"It is probable the double sulphate was intended, but it would be better when practicable to refer to the writer. If that cannot be done the dispenser must rely on his own judgment. A knowledge of the prescriber's habit of writing his prescriptions will sometimes materially assist the dispenser."

Qy. 9.—"**Aderyn**," *Ph. J.*, 12/1/78.—"Size of pill? *Creosote* 2 *grs.*, *pil. rhei co.* 2 *grs.*"

Ans.—"S. H. P."—"If ½ doz. are wanted: *creosote (by measure)* 12 *m.*, *pulv. pil. rhei co.* 8 *grs.*, *mag. levis.* 1 *scrup.; mix the pill and creosote well, add the mag., mix and roll out quickly.* This will form ordinary size pills. C. W. BOTWOOD says: 'I find the following formula succeed:—*Creosote* 2 *m.*, *pulv. pro. pil. rhei co.* 2 *grs.*, *excip. pulv. trag. co.* 1½ *grs.*, *mica panis* 1 *gr.; ft. pil.*' A. E. C. 'finds no difficulty with 1 gr. each of cera flav. and pulv. glycyrrh., using an equivalent quantity of pulv. pro. pil. rhei co. instead of the mass.'"

Qy. 10.—"**Assistant**," *Ph. J.*, 16/2/78.—"*Bals. copaib.* 1 *dr.*, *pulv. rhei* 2 *scrup.*, *mag. carb.* 1 *scrup.; ft. pil.* 24."

Ans.—"THE MONTH."—"A good result will be obtained by the addition to the copaibæ of about half its weight, or less, of slaked lime, allowing time for solidification. There may be a difference of opinion as to the propriety of adding calcined mag. or slaked lime to solidify copaibæ, but with our present knowledge there seems no equally satisfactory alternative."

Qy. 11.—"**Alfred Chapman**," *Ph. J.*, 23/2/78.—"Can hyd. c. cretâ be used when 'blue pill' is ordered with soft extract?"

Ans.—"THE MONTH.—"It is an axiom in dispensing that there should be no substitution;* when the writer of a prescription orders a preparation of the B.P. his instructions should be strictly carried out."

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* *See* "Incompatible Mixture," page 54.

If the extract be too soft it may be evaporated by gentle heat to a proper consistence to form a mass with blue pill.

Qy. 12.—"**S.**," *Ph. J.*, 23/2/78.—"Is there any valid objection to the use of tartaric acid in the manufacture of quinine pills?"

Ans.—"THE MONTH."—"Where quinine is directed to be made into pills, tartaric acid should not be employed; confection of hips will answer the purpose, but as this excipient colours the pills, glyc. and trag. is to be preferred." *

Qy. 13.—"**A. H.**," *Ph. J.*, 23/2/78.—"*Ferri iodid.* 3 *grs., excip. q.s.; m. ft. pil., mitte* 12."

Ans.—"THE MONTH."—"Glyc. and trag. is an excipient very suitable in this case. As iodide of iron is seldom met with in a satisfactory condition, a better result may perhaps be obtained by proceeding as in pil. ferri iodid. B.P., calculating the proper proportion of iodine and iron to yield the required amount of iodide of iron."

Qy. 14.—"**R. Turner**," *Ph. J.*, 2/3/78.—"*Calomel* 4 *grs., pulv. Doveri* 2 *scrup., bismuth trisnit.* 2 *scrup., ol. carui q.s.; ft. pil.* 24. Prepared by adding 5 *m. ol. carui and gly. and tragac.* as excipient, but were found softer and larger than before obtained."

Ans.—"THE MONTH."—"Where gly. and trag. excipient is used, the mass should be well kneaded, or more will be employed than is necessary, and the mass may be softer than is desired. In this instance, 'the above manipulation should form' a firm mass easily rolled into pills that will not 'lose their shape by keeping.' J. C. Culf 'suggests that 3 min. of ol. carui would be sufficient.' J. De Carle says, 'a few drops of mucilage of acacia will make a very convenient mass for rolling.'"

Qy. 15.—"**C. T. Weary**, Plymouth," *Ph. J.*, 2/3/78.—"*Bals. Peru* 1 *dr., myrrh. pulv.* 2 *scrup., assafœtid.* 1 *scrup., galban.* 1 *scrup., pulv. capsic.* 25 *grs.; m. ft. pil.* 30."

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* *See* "Pills and their Excipients—Quinine Sulphate," Introduction, page 60.

Ans.—"THE MONTH."—"Not the least difficult part of a dispenser's duties is to compensate for the want of practical pharmacy on the part of some members of the medical profession. If the above be written in accordance with the ancient view of the order of a prescription, that the first ingredient should be the basis, the second the auxiliary, the third the corrective, the fourth the vehicle, the balsam of Peru must be an important element, but as it does not enter into a single preparation of the B.P., its medicinal value may be doubted. * * * If from half to one-third its weight of calcined magnesia be stirred into the balsam Peru, and the mixture allowed to stand some hours, the mass may be made into pills; careful manipulation, however, is requisite to accomplish this."

Qy. 16.—"**J. K. G.**," *Ph. J.*, 16/3/78.—"To form a hard pill?—*Ext. rhei* 48 *grs.*, *ext. chelidonii* 48 *grs.*, *quin. sulph.* 24 *grs.*; *m. ft. pil.* 24."

Ans.—"THE MONTH."—"If the extracts are of B.P. consistence, there could be no difficulty in making up the above prescription with the quinine in powder. If the extracts be soft, they should be evaporated at a low temperature in a current of air, or in a drying closet, and the resulting mass would be firm."

Qy. 17.—"**Inquirer**," *Ph. J.*, 23/3/78.—"*Ext. ergotinæ* 3 *grs.*, *quin. dis.* 1 *gr.*; *m. ft. pil.*, *ter. quaterve die sumend. Mitte* 18. Is there a definite preparation known as ext. ergotinæ?*"

Ans.—"THE MONTH."—"Ext. ergotinæ is Bougean's ext. ergot., is of soft consistence, and often combined with quinine."

Qy. 18.—"**Practice**," *Ph. J.*, 23/3/78.—"How is it possible to produce a pill containing all the active properties of the two ingredients ordered in the following prescription, in one grain and a quarter? Such a pill has been produced to me as prepared from: *Podoph. resin* 2 *grs.*, *ext. hyoscy.* 1 *scrup.*; *m. fiat pil. six (6).* Allowing that an ext. hyoscy. dur., or even superlatively hard extract be used, is it possible to make a pill by heat meeting the views of the prescriber, it always being understood in terms of B.P., of consistence to form a pill?"

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* *See* Paper on this preparation in *Proceed of the A. Phar. Ass.* 1877.

Ans.—"The Month."—"It is not professed to do impossibilities in the columns of the *Journal*, or assistance would gladly be offered in a solution of the above. The dispenser should make the pills so that together they weigh 22 grs., and rest his reputation on accurate dispensing."

Qy. 19.—"**Beta**," *Ph. J.*, 13/7/78.—"The following prescription was left at a pharmaceutical chemist's with a request to make up 100 doses: *Sesquibromid. ferri* 36 *grs.*, *ext. nucis vomicæ* 3 *grs.*, *ext. ergotæ aquos* 24 *grs.*, *pulv. canthar.* 24 *grs.*; *m. ut. ft. pil.* 18. One pill to be taken three times a day."

On carefully reading the prescription the spelling of the genitive terminations, the peculiar combination of drugs and the doses, attracted attention.

On the customer presenting himself, the name of the prescriber was asked for and given without hesitation. It proved to be that of a medical man residing more than two hundred miles from London. On referring to him he replied:—

"The doses are *not* poisonous. The prescription has certainly my professional sanction. The patient might be put on his guard so far as irritation of the bladder might occur; but this is not likely. I note the doses again and return your note that you may see."

It was thus plainly apparent that the chemist was required to dispense and order to be taken four grains of powdered cantharides in a day, and that this quantity was to be repeated for six days.

After deliberating on the duty owing to the prescriber and to the patient, as well as on the responsibility that might be incurred; and after consulting with friends of large experience in the medical profession and in pharmacy, the prescription was returned to its owner undispensed.

Ans.—"The Month."—"A dispenser is expected to recognise unusual doses, and when he considers the dose a poisonous one, his first duty is to refer to the writer, taking care to ascertain that he is a properly qualified practitioner. In this instance the unusual dose was recognised, and the prescriber was communicated with on the subject, the result being that the author of the prescription, evidently quite aware of what he had written, endorsed the unusual doses, and further emphatically stated that 'the doses are not poisonous. The prescription has certainly my professional sanction.'

"Now comes the difficulty. An apothecary is legally bound to make up the prescription of a physician, but the dispensing chemist is not—he may use his own discretion, and, if he chooses, decline the responsibility.

"What is a poisonous dose of cantharides? It is stated in Bentley and Redwood's edition of *Pereira's Materia Medica* that 'powdered cantharides are not unfrequently employed internally; the dose is 1 or 2 grs. in the form of pills.' The *United States Dispensatory* says: 'The dose of Spanish flies is 1 or 2 grs. of the powder, which may be given twice a day.' Dr. Thompson represents the medicinal dose of the powder to be from 1 to 3 grs.

"In the foreign Pharmacopœias there is usually a table of the maximum doses of potent medicines, and the quantity to be taken during the day, that may be dispensed by the chemist, without being specially marked thus (!) by the prescriber. In the *German Pharmacopœia* the maximum dose that may be taken during the day is 2⅓ grs., and in the *Austrian Pharmacopœia* is 2⅘ grs., so that in the latter Pharmacopœia the quantity that may be dispensed for consumption during one day in the ordinary course of business, and without the special note of the prescriber is *just three grains.*

"The quantity of cantharides in each pill of the prescription in question is not in excess of that stated in Bentley and Redwood's *Pereira*; neither is it so large as the maximum dose quoted by Taylor, and it is only the same quantity during the day as that given by the *U. S. Dispensatory.*

"Having obtained the professional sanction of the writer of the prescription, and with the authorities just quoted before him, the dispenser would have been justified in making up this prescription. It is, however, a case of difficulty, one on which opinions will probably differ."

Qy. 20.—"**Sub. Umbra Floresco**," *Ph. J.*, 24/8/78.—"When *Pil. Podophylli* is ordered what size pills should be made, and how much podophyllin should they contain ?"

Ans.—"Henry Brown."—"As the dose of podophyllin is from $\frac{1}{6}$ to $\frac{1}{2}$ gr., or sometimes more, according to the peculiar idiosyncracy of some persons, it is impossible to say what should be dispensed when simply 'pil. podophilli' is ordered. Whatever formula is adopted, the pills should not be larger than 3 or 4 grs., and as I have known most violent purging from a single dose of $\frac{1}{4}$ of gr. combined with extract of henbane, and 2 grs. cause little disturbance of the bowels, it is well to bear this in mind in dispensing an agent so variable in its action."

Qy. 21.—"**W. L.**," *Ph. J.*, 24/8/78.—"*Camphoræ* 3 *grs.*, *calomel* 1 *gr.; m. ft. pil. mitte* 12. No excipient being ordered, a neighbour suggested *ext. hyoscy.*, but I found *muc. of trag.* give a splendid result."

Ans.—"H. Brown."—"W. L. was right; the ext. hyoscy., as a rule, is a bad excipient."

The addition of ext. hyoscy. would be inadmissible without the permission of the prescriber.

Qy. 22.—"**Sub. Umbra Floresco**," *Ph. J.*, 31/8/78.—"*Acid carbol.* 1 *gr.*, *ferri sulph.* 1 *gr.*, *ext. nuc. vom.* $\frac{1}{4}$ *gr.*, *pulv. rhei* 2 *grs.; m. ft. pil. mitte* 12. The best excipient ?"

Ans.—"Inquirer recommends hard soap. G. J. K. glyc. and trag. W. R. H. says: 'Add 3 grs. powdered trag., and 1 small drop of glycerine for 12 pills, which answers far better than the ordinary trag. paste.' J. W. Barnes advises carbol. acid 1 part, powdered elm bark 2 parts, gum arabic 1 part, trag. paste q.s. The writer of The Month says: 'A more satisfactory result will be obtained by using 2 grs. of bread crumb to each grain of carbolic acid.'"

Qy. 23.—"**S. T.**," *Ph. J.*, 13/4/78.—"*Creasote* 1 *drop*, *panis q.s.*, *muc. acac.* 1 *drop; m. ft. pil. mitte* 12 *silvered*."

Ans.—"The Month."—"The previous answer will also apply to this query. Should the bread crumb be crumbly, a little glyc. of trag. will give it a pilular consistence. These pills may almost immediately be silvered."

Qy. 24.—" **Apprentice**," *Ph. J.*, 11/5/78.—" *Phosphori* $\frac{1}{30}$*th gr., quiniæ sulph.* 1 *gr., ferri redacti* 3 *grs., m. ft. pil.* How to prepare ? "

Ans.—" The Month."—" Make the quinine and iron into a tolerably stiff mass with glyc. and trag., dissolve the phosphorus in a mortar with a few drops of bisulphide of carbon, and before the fluid evaporates, add ol. theobromæ in the proportion of ½ gr. to each pill, then mix the dissolved phosphorus with the ol. theobromæ before adding the mass of quinine and iron, and work them together. The mass makes readily, and keeps well. The phosphorus is in an unoxidized state, and the pill is of the size required."

Qy. 25.—" **A .P. S.**" *Ph. J.*, 8/7/78.—" *Ferri iodid.* 1 *dr., potass. iodid.* 2 *scrups.* ; *m. ft. pil.* 60. What excipient ? "

Ans.—" The Month."—" About 20 grs. of crumb of bread, chosen firm and not disposed to be crumbly, will make this quantity very readily into a satisfactory mass. Crumb of bread is a very valuable excipient in cases of compounds otherwise very intractable."

Qy. 26.—" **A. W. G.**" *Ph. J.*, 29/6/78.—" The number of pills to be made ? *Aloin* 6 *grs., jalapin* 6 *grs., hyd. subchlor.* 6 *grs., pil. rhei co.* 30 *grs.* ; *divid. in pil. argent. involut. quarium duo. s. p. r. n.*

Ans.—" The Month."—" The dispenser must, in the absence of the writer, and when he cannot be referred to, use his own judgment and discretion in dispensing such a prescription as the above, where the number of pills is not stated, guided by his practical experience, always taking care to keep within the maximum dose of every ingredient. Taking the dose of each drug into consideration, together with the quantity required to make a fair sized pill, it may be assumed that the writer intended the mass to be divided into twelve pills ; each pill then would contain ½ gr. of each of the first three ingredients, and 2½ grs. of the comp. rhubarb pill, making together a 4 gr. pill."

Qy. 27.—" **C. Griffith**," *Ph. J.*, 29/6/78.—" The large dose of phosphorus ?—*Phosph. pur.* ¼ *gr., ext. hyoscy.* 2 *grs.* ; *m. ft. pil. mitte* 9, *cap.* 1 *ter. die.*"

Ans.—" THE MONTH."—" The dose of phosphorus is unusually large, very possibly it is intended for $\frac{1}{40}$th of grain. There would be more danger in administering an excessive dose of phosphorus in a pill, than dissolved in oil. Phosphorus could not be retained in a free state if combined with an extract such as hyoscyamus; it would rapidly oxidize, and would no longer be that which it is evident the prescriber intended. This prescription should not be dispensed without the writer's attention being previously drawn to the unusually large doses of phosphorus."

The dose of pure phosphorus is stated in the B.P. to range from $\frac{1}{30}$th to $\frac{1}{10}$th of a grain. Dr. Adolphe Waltuch in his *Dictionary of Materia Medica and Therapeutics* gives the dose from $\frac{1}{20}$ th to $\frac{1}{4}$th of a grain. Speaking of the treatment of neuralgia by phosphorus, J. A. Thompson says this last quotation alone gives the proper range of dose for this remedy.—*The Practitioner, October, 1869.*"

Salicylic Acid Pills.—Mr. J. T. White, of Clifton, states, says *The Chemist and Druggist*, 15/1/77, that if salicylic acid be beaten with $\frac{1}{10}$th its weight of borax, and the same proportion of glyc. and trag., an excellent pill mass is obtained.

EMULSIONS.

INTRODUCTION.

The production of Emulsions, Mr. Proctor observes, is probably the task in which the pharmacist requires the most skill and judgment.

The object to be obtained, says the *Chemists' and Druggists' Diary*, is to break up the substance to be emulsified into a multitude of minute particles, and to enclose each particle in a coating of the emulsifying agent in such a manner that they shall remain permanently separated in a quiescent state; in fact, that the natural antagonism of the two agents should be thoroughly overcome, and a perfectly permanent fluid obtained. The art of making emulsions, therefore, consists in finding and introducing some body to overcome this antagonism.

The most perfect emulsion, is, according to Dr. Dobell, the pancreatic emulsion. In his paper on this subject

(*Lancet*, Sept. 10th, 1864,) he gave the measurements (made by the late Mr. Farrants, president of the Microscopical Society) of the globules of fat in cod liver oil and beef fat emulsions as compared with pancreatic emulsion and pure milk. He showed that the majority of the particles of fat in cod oil emulsion ranged from the 16·000th to the 1·200th of an inch in diameter, and those in the beef fat emulsion from 10·000th to the 2·500th of an inch. Since Mr. Farrants' measurement I have examined a chance specimen procured from Messrs. Savory & Moore, in which the large majority of the particles of fat range from the 21·600th to the 14·400th of an inch in diameter, the prevailing size being the 18·000th of an inch, while in specimens of good new milk (cold), the large majority of the particles of fat range from the 7·200th to the 3·600th of an inch in diameter, the smallest being 10·800th. The permanent character, therefore, of pancreatic emulsion far exceeds that of milk.—*Practitioner*.

The following is condensed from a paper, read at the British Pharmaceutical Conference, September, 1880, by A. W. Gerrard, F.C.S., Professor of Pharmacy and Materia Medica to the University College Hospital:—"The emulsifying agents," says Mr. Gerrard, "most commonly used are the mucilage of tragacanth and acacia, likewise their powders. My experiments have been confined to these substances, previous results having proved that where honey, yolk of egg, and almond powder are recommended, acacia or tragacanth answers equally well, or better. After some forty experiments, the results obtained were altogether in favour of powdered gum acacia; the emulsions it forms being perfectly milk-like fluids, in which the eye cannot detect any particle of oil, they pour easily from the bottle, and mix with water in any proportion without separation.

"When using powdered gum acacia, it is essential that it be of the best quality and almost white. The fluid to be emulsified must be measured in a *dry* measure and poured into a *dry* mortar, into which has previously been put the necessary amount of powdered gum; now add the portion of water indicated in each case, but by no means let it be measured in the oily measure. Well triturate the mixture, taking care that every particle of oil is brought within the range of the disruptive mechanical motion, which is indicated by a peculiar cracking sound. Want of attention to this part of the operation is a frequent source of failure, for if any oil gets up the side of the pestle or mortar, and is omitted from the emulsifying process, it will most certainly show itself by floating upon the surface of the finished product, spoiling what might otherwise have been a perfect preparation.

"When the substance to be emulsified is a solid body with resinous properties, dissolve it in twice its quantity of spt. vin. rect., then treat in the same manner as for fluids. Syrups, tinctures and flavouring agents should, as a rule, be added last.

"It is essential to success that the exact proportion of water be used in first forming the emulsion; if more or less be used failure will result."

Ex. 1.—**Cod Liver Oil Emulsion.**—Cod liver oil 4 ozs., ess. oil of almonds 4 m., powdered gum arabic 1 oz., syr. 1 oz., water to 8 ozs. Mix the oil with the gum in a *dry* mortar, add 2 ozs. of water, little by little, and stir well till a perfect emulsion is formed, then add the remainder of the water, essential oil and syrup.

Ex. 2.—**Castor Oil Emulsion.**—Oil 4 drs., gum 80 grs., ess. oil of almonds 1 m., simp. syrup 2 drs., water to 2 ozs.: proceed as above, using 2 drs. of water to form the emulsion.

Ex. 3.—**Oil of Turpentine Emulsion.**—Oil turpentine 4 drs., gum 2 drs., syrup 2 drs., water to 2 ozs. As above, using ½ oz. of water. Oil of turpentine is considered one of the most troublesome bodies to emulsify: prepared by this form there is no difficulty. For this, Genois recommends: Powdered Castille soap 10 grs., turpentine 1 oz., put into a round bottomed mortar; add the turpentine by degrees, with constant trituration; transfer the mixture to a bottle, add ½ oz. of water, and shake vigorously; then add a little more water, and shake again. The product is a very white emulsion, which does not separate on mixing with water in any proportion.

Balsam of Copaiba Emulsion.—Balsam 3 drs., gum 3 drs., syrup 6 drs., water to 6 ozs. Mix as before, using 3 drs. of water to form the emulsion, and add the rest and syrup.

Resin of Copaiba Emulsion.—Resin 2 drs., spt. vin. rect. 4 drs., gum 4 drs., water to 6 ozs. Dissolve the resin in the spirit, add the gum, mix well; add 1 oz. water to form the emulsion, and afterwards the remainder.

Balsam of Peru Emulsion.—Balsam 3 drs., gum 2 drs., syrup 6 drs., water to 6 ozs.; mix as above, using 3 drs. water to form the emulsion, and add the rest.

In emulsions containing resins, or bodies heavier than water there is generally a sediment; it is so with the two previous forms, but there is no aggregation into a hardened mass, and a slight shake of the bottle makes all right again.

Chian Turpentine Emulsion.—Chian turp. 2 drs., ether 4 drs., gum 2 drs., water to 6 ozs. Dissolve the turpentine in the ether and filter, washing the filter with 1 dr. of ether; mix well with the gum, using ½ oz. of water to emulsify, then add the remainder.

No rule of thumb practice should be attempted in making emulsions, but the proportions strictly adhered to. Gum acacia, in my hands, has achieved the greatest success, and merits the distinction of being called the perfection of emulsifying agents.—*Pharmaceutical Journal.*

Professor Diehl, of the Louisville College of Pharmacy, who corroborates Mr. Gerrard's conclusions, gives the following as the principles of emulsification:—(1) That the water and gum shall be in definite and absolute proportions to each other—viz.: 3 of water to 2 of gum, by weight. (2) That the relation of oil to gum and water shall be definite within certain limits—that is to say, the mucilage formed in the above proportions is capable of perfectly emulsifying a minimum and a maximum proportion of oil: the minimum is 2 of oil to 1 of gum; the maximum is 4 of oil to 1 of gum. (3) That the trituration of the oil, gum, and water be continued until a perfect homogeneous emulsion is formed, before the addition of a further portion of water or other liquid. This may be termed the *Concentrated Emulsion*, and constitutes the basis of all perfect emulsions. It will bear dilution to any extent, forming mixtures varying from thick cream to very thin milk.

Chloroform.—Half dr. tinct. quillaya is required for 10 min. of chloroform.

Fixed Oils are perfectly emulsified by ½ dr. of tinct. quillaya to every ½ oz. of oil with ½ oz. of water.

Ext. Filicis Liq.—Turpentine, Copaiba.—1 dr. of these may be emulsified with ½ dr. tincture.

Tinct. Benzoin and Bals. Peru may be emulsified with yolk of egg or mucilage.

Bals. Tolu.—Bals. 2 parts, alcohol 90° 10 parts, tinct. quillaya 10 parts, water 78 parts.—*Soc. de Pharm. de Paris.*

Cade Huile de, Ol. Cadinum, Juniper Tar Oil, and **Pix Liquida** are directed to be emulsified as *Bals. Tolu.*—(*Ibid*).

Spermaceti.—Powdered with spt. vin. rect., then emulsified with yolk of egg.

Tinct. Quillaya Sapon. is thus made.—Cort. quill sapon. 1 part, alcohol 90° 5 parts. Digest in a water-bath for half an hour at a temperature near boiling; then macerate 48 hours with occasional stirring, and filter.

Tincture of Quillaya.—4 ozs. to a pint of rectified spirit, digested three days and strained, is also recommended.

The *Soc. de Pharm. de Paris* recommends this tincture for emulsifying substances insoluble in water.—*Chemists' and Druggists' Diary.*

Emulsion Camph. c. Benzoin.—Acid benzoic 10 grs., camphor 2 grs., gum acac. ½ dr., aqua ad. 1 oz. —G. Hospital.

Pancreatic Crude Emulsion.—Take the pancreas of the pig, freed from fat and all extraneous matter, 25lbs., lard 20lbs., water 30lbs.; bruise the pancreas in a marble mortar, then add the lard, beat and mix them well together, adding the water little by little as it becomes absorbed till all is added; strain by squeezing through muslin.

Pancreatic Fat.—Treat the crude emulsion with ether in the proportion of ether three to one of emulsion, mix well, and allow the mixture to stand till two strata are formed—*A*, an etherial solution of pancreatized fat at the top; *B*, a watery stratum at the bottom. Decant the etherial solution and filter, put it into a proper still and recover the ether by distillation. That which remains in the still is pancreatic fat.

Pancreatic Emulsion.—Pancreatic fat 2 parts, rectified spirit 1 part, distilled water 2 parts, oil of cloves q.s. Put the fat into a mortar, and add little by little the spirit and water previously mixed, and lastly the oil of clove to flavour. *Dose*: 1 to 4 drs., mixed in milk or water, from one to four times a day.

QUERIES.

Qy. 1.—**Em. of Cod Liver Oil with Lactophosphate of Calcium.**—*Oil morrhuæ* 4 *ozs., pulv. sacch. albi.* ½ *oz., pulv. acac.* ½ *oz., oil gaulther.* 26 *drops, ol. menth. pip.* 6 *drops, aqua distil.* 4 *ozs.*; *misc., fiat. emuls. cui adde syr. calcii lactophosphate* 2 *ozs.*—L. von Cotzhausen in *Amer. Jour. Phar.*, 1878.

Ans.—The following formula is recommended by Mr. Shinn:—Cod liver oil 1 pint, gum (pd.) 4 ozs., sugar (pd.) 6 ozs., sol. lactophosph. calc. (1 dr. 6½ ozs.) 6½ ozs., lime water 6½ ozs.; add the cod liver oil and essential oils last.

Qy. 2.—**Pancreatic Emulsion of Cod Liver Oil.—R. V. Malleson.**—*Pancreatin saccharated* 1 *oz., water* 4 *ozs., white sugar (pd.)* 7 *ozs., cod liver oil* 1½ *pints, oil gaultheria* 20 *drops, oil bitter almond* 5 *drops* (10 *grs. pancreatin emulsify* 2 *drs. of cod liver oil*).—*Pharmaceutical Journal.*

Qy. 3.—*Ph. J.*, 20/7/78.—"What quantity of gum or gelatine and oil of bitter almonds should be used?"—*Oil morrh.* 5 *ozs., sacch. alb.* 2 *ozs., calc. hypophosph.* 2 *scr., white Jamaica rum* 1 *oz., aqua distil ad.* 10 *ozs., gum trag. vel. gelatine q.s. ut ft. emulsio, flav. c. essential oil of almond.*

Ans.—"THE MONTH."—"The best results will be obtained by using gum arabic powder instead of mucilage: 2 drs. of gum to each oz. of oil should be rubbed with the oil, and the water subsequently added. W. Gilmour says 'Experience has determined that 2 drops to each oz. of oil is the proper proportion for flavouring, and the oil of almonds not deprived of its hydrocyanic acid is much to be preferred.'"

NOTES ON AROMATIC WATERS.

The following is condensed from an article on the B.P. waters, by George Brownen (*Phar. Jour.*, 24/9/70):—"All the B.P. waters but one are distillates, and that one—aq. camphoræ—is made with distilled water. In distilling water the first $\frac{1}{20}$th is rejected, the next $\frac{16}{20}$ths saved.

"In aqua distillata we possess the most powerful solvent known, and as such it is one of the most delicate articles to keep. It absorbs gases as rapidly as it is distilled. Not only salts and minutely divided substances, but metals also are attacked by water. Iron is dissolved as a ferrous and ferric oxide, and lead, zinc, and its compound pewter, with their well known injurious results. Copper is as easily dissolved. Cupreous water gives the blue coloration with ammonia. Manganese, mercury, silver, gold, and platinum are also attacked. Tin is dissolved, and after a little time thrown down as stannic oxide. Cadmium, bismuth, silica, and glass may be added to the list, and it is probable, if I could have experimented with the whole list of elements, nothing would have completely resisted aqueous action, or the almost, if not entirely, nascent condition of its gases. What then should we use as vessels for aqua distillata? I think this shows that glass, or metallic cisterns coated with their most insoluble compound, would be safest and best.

"All the substances found in distilled water, including the rejected distillate, are also found in the medicated waters."

To these waters I now briefly call attention:—

Aq. Anethi.—In a note to the translation of the P.L., Phillips says that this oil is soluble in 1,500 parts of water. If so, it is evident the proportion of fruit or oil is excessive in the B.P. form. This is a fact, and if maceration had been ordered the quantity might have been halved, and a superstratum of oil still obtained. 1lb. of the fruit yields from 3 to 7 drs. of oil, sp. gr. ·90.

Aq. Flor. Aurant.—The foreign preparation, with which a syrup is made, is often substituted for syrup capillaire. The test given for this water should have Gobley's test, *Ph. J.*, Ap. 66, added to them; this test detects orange leaf and oil of neroli water. 1lb. of orange flowers yield about ½ dr. of oil, sp. gr. ·88.

Aq. Carui is very similar to aq. anethi; both preparations are reduced in quantity from the P.L., and by the adoption of maceration previous to distillation might still further be reduced. 1lb. of carraway fruit yields 3 to 10 drs. of oil, sp. gr. ·94.

Aq. Cinnamomi is slightly altered in proportions from the P.L. Using the bark we are not so likely to use cassia. Pereira says, "These barks may be known apart by the iodine reaction, but the oils are not so easily distinguished." 1lb. cinnam. yields 1 to 3 drs. of oil, sp. gr. 1·006.

Aq. Fœniculi comes from Scotland; possibly Englishmen are not yet alive to its value, as it is not much in request. 1lb. of fennel yields 2 to 6 drs. of oil, sp. gr. ·94.

Aq. Laurocerasi is one of the most uncertain articles in the Pharmacopœia. Draper advised standardising its hydrocyanic acid; a weak solution of hydrocyanic and sulphuric acids has been praised by others; some say make a stronger water and dilute when wanted; others omit the maceration process, so altogether it is a dangerous article. The oil varies from ·06 to ·6 per cent.—(Umney).

Aq. Menth Pip. and **Aq. Menth Vir.** represent the labiates; they are the only waters made from oils, as recommended by Hasselden, and are improvements upon the herb distilled waters of the P.L. The oil should be divided by trituration with some solid before it is put into the still.

Aq. Pimentæ has been reduced ⅛th, that is, 2 oz. less pimento to the gallon. A thin layer of oil lies at the bottom of the water; this opaque water becomes clearer by age, and deposits crystals. 1lb. of the berries yield 2 to 5 drs. of oil, sp. gr. 1·02.

Aq. Rosæ, ordered to be made from the petals, is often made with otto or rose geranium oil. 100lbs. of petals yield less than 3 drs. of solid otto, fusing at 86°.

Aq. Flor. Samb.—This, as well as aq. rosæ, the B.P. allows to be made from the salted flowers. Distillation from salted flowers proving unsatisfactory and injurious I discontinued the process, and distilled a stronger water and diluted it when wanted. This water I have found to keep well two years. Elder flowers yield scarcely ·32 per cent. of a volatile oil slightly lighter than water, yellow, solid, and with a powerful smell of elder flowers even when largely diluted.

Why is aq. pulegii omitted? It is wanted as much as some that are official. Standard forms are also wanted for aq. anisi and caryophilli.

When first made many of these waters are harsh and musty, but by keeping they mellow down.

NON-DISTILLED MEDICATED WATERS.

J. P. Remington, in *Phar. Jour.* (vol. iv., p. 652), says: "This class of preparations has long found favour with the physician as a means of administering such potent and disagreeable medicines as are readily soluble in water, and the use of carbonate of magnesia in their manufacture (although probably not the best method, renders their preparation of easy accomplishment.

"The first requisite is the selection of fresh essential oils. An aromatized water made from a stale terebinthinous oil is the worst advertisement a pharmacist can have; whilst, if a fresh oil is at hand, even an aromatized orange water can be made, which will serve many good purposes. The writer has used an orange water made in the usual manner with considerable satisfaction, and a very useful simple elixir, resembling curaçoa cordial, may be made thus: Aq. aurant. (2 drs. in a pint) 1½ ozs., simple syrup 1½ ozs., Cologne spirit 1 oz., spt. vin. gallici. opt. ½ oz.; mix.

"Some formulas for simple elixirs direct the essential oils to be mixed with the spirit, and then a certain proportion of sugar and water added and filtered. The great objection to those made in this way is that when such are used in prescriptions with water in combination, a separation of the excess of oil takes place, which renders the preparation unsightly.

"A delicately flavoured syrup of citric acid may be made which will be clear and bright, not disfigure the sides of the bottle, nor have the harshness that the officinal article possesses. To make this, double the quantity of fresh oil of lemon prescribed by the U. S. officinal formula (4 minims) should be rubbed up with a small quantity of carbonate of magnesia, a little water added, thrown on a filter, then followed by more water, sufficient to form with the sugar and citric acid the syrup of officinal strength.

"Compound aromatic waters are readily made, containing carraway, coriander, cinnamon, orange, and orange flower flavours, and form a means of preparing the host of elixirs that are now required.

"The mixed alkaloids to be dissolved in Cologne spt., syrup added, and the salt soluble in water dissolved in the aromatic water."

The use of magnesian carbonate, says R. Rother, for this purpose, is open to fatal objections, owing to the circumstance that the alkaline character of the water thus acquired decomposes the salts of morphia, mercury and silver by precipitating their insoluble bases, and that eventually a part of the magnesian carbonate itself separates.

The object of the magnesia is to effect a solution of the volatile oil by presenting it in a finely divided state to the utmost available action of the solvent. Other insoluble solids (like kaolin) are occasionally employed to meet the same end, and the supposition prevails that such a procedure alone, aside from distillation, will ensure a saturated solution.

The most perfect and convenient process by which the division of the volatile oil can be secured so as to expose the greatest possible surface to the contact of the solvent, is beyond dispute the method of precipitation, and this is performed by dissolving the oil in alcohol, and agitating the solution with a large quantity of water. There is a marked difference in the solubility of volatile oils in water, a solution of one minim in 2 ounces of water can invariably be obtained; but frequently much more will dissolve, and therefore an excess of oil should always be used to ensure a saturated solution.

The writer's process consists in using the officinal quantities of oil and water, together with four times as much alcohol as volatile oil, by dissolving the oil in the alcohol, and pouring this into a full size bottle, containing two-thirds of distilled water. The mixture is now violently shaken for a few minutes, and the solution passed through a filter previously moistened with water.

Camphor Water.—The writer makes this preparation by dissolving 30 grs. of camphor in 2 drs. of alcohol, pouring this solution into two pints of water, agitating for a few minutes in a bottle, and filtering.

Chlorine Water is a very unstable preparation. It should always be quite fresh, or quite recently prepared before use. The following extemporaneous process yields a solution of pure chlorine, containing sodium chloride, which is not, however, an objectionable impurity. The process is conducted by pouring into a quart bottle 4 ozs. of solution of chlorinated soda, previously mixed with 12 ozs. of water, and then diluted chlohydric acid by gradual addition, until, firstly, the carbon dioxide has been liberated and expelled; and, secondly, the available chlorine has all been set free and absorbed by the water, aided by frequent agitation. This product seems to be more permanent than the officinal article, as it retains a powerful odour of chlorine for a considerable time, even in bottles partly filled, if they are kept cool and excluded from the light.—*The Chicago Pharmacist.*

F. W. Remhold, Jun., says: "The best way after all to make medicated waters is to prepare by simple maceration—that is, to shake the volatile oil with the water, then set aside for a day or two, and shake the mixture occasionally, and finally filter. I find that this saturates the water completely, and avoids the presence of magnesia and alcohol. The results I deem superior to the distilled waters, if care be taken to use good oils. I find the solubility of oils of bitter almond and gaultheria is far greater than that of the other volatile oils proper. The act of solution is almost instantaneous in each case. One minim of oil of bitter almonds will dissolve perfectly and instantly in 6 drs. of water without the addition of magnesia or alcohol."—*The Pharmacist.*

G. Brownen suggests the following process (*Phar. Jour.*):—A small tube, containing an essential oil, is placed in water in a position opposite to the sp. gr. of the oil, and the ends of the tube are closed with membrane, vegetable parchment, &c. Exomosis of the oil commences, and in 24 or 48 hours the water is saturated, and may be drawn off and replaced by a fresh portion. This is a convenient way of making those waters which are frequently made by rubbing down the oil with some other substance.

Artificial Vichy Water.—Sulphate of potassa 2 ozs., sulphate of soda 4 scrups., phosphate of soda 25 grs., chloride of sodium 6 drms., bicarbonate of sodium 5¼ ozs., carbonate of ammon. 10 grs., water 4 pints. Charge slightly and let stand 12 hours, remove from the fountain, make up to 10 gallons, and charge with carbonic acid gas as usual.—*The Pharmacist.*

Orange Flower Waters.—There are three sorts of orange flower waters found in commerce—the first distilled from the flowers; the second made with distilled water and oil of neroli; and the third distilled from the leaves, the stems, and the young unripe fruit of the orange tree. The first may be easily distinguished by the addition of a few drops of sulphuric acid to some of the water in a tube, a fine rose colour is almost immediately produced. The second gives the same colour when it is freshly prepared; but after a certain time—two or three months at the farthest, this colour is no longer produced, and the aroma disappears completely. The third is not discoloured by the addition of sulphuric acid; it has scarcely any odour, and that rather an odour of the lemon plant than of orange flowers.—*Annals of Pharmacy*, Vol. I., p. 120.

Aqua Vitæ Aromatica Amara.—Galangal, ginger, of each 2 parts; orange berries, European centaury, gentian, cinnamon, angelica, of each 1 part; alcohol 30 parts, and water 26 parts. Digest and filter. (F. BOLLE, formerly J. B. Claud, Berlin).—*New Remedies.*

QUERIES.

Qy. 1.—"**J. W. B.**," *Ph. J.*, 3/8/78.—" *Aqua Glycyrrhizæ.* — The strength and preparation of aq. glycyrrhizæ ? "

Ans.—" G. F. K."—" Aqua glycyrr. is usually prepared from Guy's Hospital formula thus : Ext. glycyrr. ½ oz., aqua 10 ozs."

Qy. 2.—" **Bubius**," 13/4/77. —" *Aqua Menth.*— When ordered, which should be used ? "

Ans.—" The Month."—" Aqua menthæ referred to is mint water, the product of mentha viridis. Mint water was formerly more frequently met with in prescriptions than is the case at the present time. Sowerby says ' the peppermint was not introduced as a medicinal plant until the beginning of the last century, the green mint being usually preferred by the older physicians.' Mint water is still a favourite with some members of the medical profession ; at the same time it is just probable that in this instance the writer may have intended aqua menth. pip., but the dispenser without positive knowledge to this effect has no alternative, he must use the aqua menth. viridis."

Qy. 3.—" **T.**," *Ph J.*, 15/9/77.—" *Aqua Camph. Conc.*— A formula for preparing ' *aqua camphoræ conc.*' 1 to 7 or 1 to 15. I believe such a preparation is supplied by the wholesale houses, and one person makes *aqua camph. conc.* 1 to 40."

Ans.—" G. F. Bruce " has long used a conc. camph. julep, prepared as follows :—Camph. 95 grs., spt. vin. rect. 5¾ ozs. Solve. One part to 32 of water makes a perfectly clear aqua camph. " Chemist and Druggist " gives camph. 1 oz., spt. vin. rect. 10 ozs. by weight.

INHALATIONS.

The practice of causing patients to inhale various volatilized substances, says Dr. Paris, appears to have been of very ancient date. The inhalation of the fumes of orpiment is a practice attributed to Galen, and one of his most distinguished disciples, Rhazes, recommended it to be inhaled by consumptive patients in combination with stimulants and resinous substances such as storax, myrrh, galbanum, and aristolochia root.

We are, by these means, enabled to bring various bodies into immediate contact with organs which are inaccessible to such remedies in any other form of aggregation.

Aqueous Vapours in certain catarrhal affections when accompanied with painful and difficult expectoration. In pneumonia, after the violence of the arterial excitement has been reduced, the inhalation of steam of hot water, or decoction of emollient herbs will often contribute to the support of an easy expectoration. In dyspnœa, attended with a spasmodic condition of the pulmonary organs, vapours impregnated with sulphuric ether have been recommended. Dr. Pearson states that the efficacy of such an application is materially enhanced by dissolving in it a portion of the extract of conium. Dr. Böokher, of Copenhagen, recommends the vapour of camphor in complaints affecting the cavities of the nose, throat and chest. He states in the worst cases of stoppage of the nose from catarrh, a piece of camphor need only be kept a few minutes before it, to obtain great relief.—*Pharmacologia.*

Inhalations as prescribed at the Throat Hospital, Golden Square, are of 5 kinds :—

1. **Hot Inhalations.**—Moist air 130° F. to 150° F. impregnated with volatile matter.

2. **Cold Inhalations.**—Moist air 60° F. to 100° F. impregnated with volatile matter.

3. **Dry Inhalations.**—Volatile matter vaporised by heat.

4. **Atomized or Spray Inhalations.**—Of atomized fluids.

5. **Fuming Inhalations.**—Of smoke of ignited nitrated paper.

Hot Inhalations.—These have a special character imparted to them by the particular medicaments employed in addition to the hot water. The Electic Inhaler, made under the direction of Dr. M. Mackenzie, physician to the Throat Hospital, is recommended for hot or cold inhalations.

Inhalations should, as a rule, be used before meals, and not more than six inspirations should be taken in a minute. In order to avoid catching cold, the patient should not go out of doors for an hour after inhaling.

In the case of most essential oils light carbonate of magnesia or prepared kaolin is used to hold the oil in suspension, in the proportion of ½ gr. to each drop. This medium is preferable to mucilage, glycerine, or spirit of wine.

Cold Inhalations are used to produce a general effect on the mucous membrane of the throat, and where hot inhalations cause headache and faintness, or in hot seasons and hot climates. Dry hot inhalations are indicated in cases of excessive secretion, but are difficult of administration, owing to the high temperature necessary for their efficient application. By a slight adaptation, however, of the Electic Inhaler this is overcome.

Any of the volatile oils, iodine, or thymol, may be used as dry inhalations, in the same doses as for steam inhalations, only instead of mixing the oils with light carbonate of magnesia, it should be dissolved in spirit (vide *vapor santali*).

Fuming Inhalations are derived from the smoke arising from the ignition of unsized medicated paper, steeped in a solution of nitrate of potash.

The value of these inhalations has long been recognized, but they have not hitherto been placed on a scientific basis.

This is now done by requiring the papers to be steeped in solutions of definite strength, and by modifying their effects by the addition of various volatile principles.

This form of inhalation is applied in cases of spasmodic dyspnœa (difficult respiration) especially when dependent on asthmatic complication, or on spasm of the abductors of the vocal chords. A special simple inhaler is used thus: A strip is lit at one end and dropped into a cylindrical vessel about four inches high, and of a diameter of 2 inches. A wire gauze cover of V shape is then inserted, and the fumes are inhaled by repeated deep inspirations.

The following examples are from the *Throat Hospital Pharmacopœia* :—

Vapor. Acid Acet.—Acetic acid, glacial acetic acid, of each ½ oz., two teaspoonfuls in a pint of water at 140° F. for each inhalation. *Use.*—Sedative and antiseptic. Very useful in the inflammatory sore throat of scarlet fever, &c.

Vapor. Acid Carbol.—Pure acid 420 grs., water 1 dr.; dissolve.

For hot moist air Inhalation.—Twenty drops in a pint at 140° F. for each.

For hot dry Inhalation.—A teaspoonful to be poured into the apparatus for dry inhalation, and the vapour inhaled.

For cold Inhalation.—Two teaspoonfuls in a pint at 80° to 100° F. *Use.*—Antiseptic. Very serviceable in syphilitic and carcinomatous ulcerations.

Note.—The water in this formula is just sufficient to liquefy the acid.

Vapor. Acid Hydrocyan.—Diluted acid B.P. 1 dr., water to 1 oz.; m. A teaspoonful in a pint of water at 80° F. for each. *Use.*—Sedative. Very useful in the cough of laryngeal phthisis and some spasmodic affections.

Vapor. Acid Lactici.—*Acid* 20 *m.*, *water* 1 *oz.; m.* For Atomized Inhaler. *Use.*—Of great service in diptheria. It appears to have the effect of dissolving the membranous exudation.

Vapor. Ammoniæ.—Sol. am. B.P. sp. gr. 0·959, water, of each 4 dr.; m. A teaspoonful in a pint at 80° F. for each inhalation. *Use.*—Stimulant. In chronic laryngitis (inflammation of the larynx) and functional aphonia (loss of voice). May be advantageously employed in combination with any of the volatile oils, or with camphor or thymol. In such case prepared kaolin is to be used for keeping the oils in suspension in place of magnesia.

Note.—The strong salts of ammonia, employed as smelling salts, are very useful in cases of obstinate sneezing, as in hay fever, influenza, &c. The patient should be directed to smell the salts *directly a disposition* to sneeze is felt.

Vapor. Amyl Nit.—Nitrite of amyl 8 m., rect. spt. to 1 oz.; m. A teaspoonful in a pint of water at 100° F. for each inhalation. *Use.*—Antispasmodic. Valuable in some cases of asthma and spasm of the glottis.

Vapor. Benzoini.—Comp. tinct. of benz. 1 oz. A teaspoonful in a pint of water at 140° F. *Use.*—A most valuable sedative for acute inflammation of the pharynx and larynx.

Vapor. Camphoræ.—Spt. of camph. 1 dr., rect. spt. 3 drs., water to 1 oz. A teaspoonful in a pint at 140° F. To be inhaled slowly. *Use.*—Stimulant. Valuable in chronic glandular laryngitis.

NOTE.—Camphor in the proportion of 6 grs. to the oz. of inhaling mixture will be found a useful additional *stimulant* to any of the other inhalations.

Vapor. Lupuli.—Oil of hops 6 m., light carbonate of mag. 10 grs., water to 1 oz. A teaspoonful to a pint at 140° F. for each. *Use.*—Sedative. Especially useful in the distressing cough of laryngeal phthisis.

NOTE.—This will be found a great improvement on that prepared by macerating hops in hot water. The bulk of the hops renders the old form inconvenient, and it varies very much in effect, according to the age and quality of the hops.

Vapor. Santali.—Oil of Sandal-wood 6 m., rect. spt. to 1 oz.; m. 10 or 15 drops to be used with the dry inhaler, and the vapour inhaled. A fresh quantity of the solution may be added five or six times, so as to make the amount one teaspoonful for each inhalation. *Use.*—Sedative. Valuable in sub-acute inflammations with increased mucous secretion.

Vapor. Thymolis.—Thymol 6 grs., rect. spt. 1 dr., light carb. mag. 3 grs., water to 1 oz.; m. A teaspoonful to a pint at 140° F. *Use.*—A strong stimulant and disinfectant. Very useful in pharyngitis and laryngitis when associated with exanthemata (eruption). Thymol, like camphor, will be found a most useful addition to many of the essential oil inhalations.

Nitrated Papers.—Although only an extremely small quantity of saltpetre passes off with the smoke, the therapeutic value is probably due to the product of the combustion of the paper itself.

NOTE.—A particular character may be given to these papers by the addition of various volatile principles. Thus, camphor and cassia increase their powers; whilst benzoin, santal and sumbul reduce their action and make them less irritating. The medium strength paper (No. 2) is generally employed, and the method of preparing them is to moisten the papers in the tincture, or, in the case of essential oil, with a solution of the oil (one in nine of spt. vin. rect.), and to expose the papers for a few minutes to allow the spirit to pass off. They should be kept in tin foil, or prepared in small quantities as the demand requires.

Nitrated Paper, No. 1.—Nitre 30 grs., water 1 oz.; dissolve. No. 2.—Nitre 45 grs., water 1 oz. No. 3.—Nitre 60 grs., water 1 oz. Saturate white blotting-paper in the solution, and dry. Cut the paper into 3 inches long and half inch broad. The object of this division of the paper is to enable the practitioner to order definite quantities.

Light the paper, drop it into the "Fuming Inhaler" or any cylindrical vessel, and inhale the smoke. Use from one to six papers, one after the other at each inhalation.

The following are the preparations found most useful:—Nitrated papers with comp. tinct. of benz., spirit of camph., oil of cassia, oil of cinnamon, oil of santal, tinct. of sumbul.

Inhalation for Chronic Bronchitis. — Mr. R. Fletcher states, in the *Philadelphia Medical Times*, that he has found chloral hydrate of great use in relieving chronic bronchitis in elderly persons. For this purpose a solution of 10 grs. in 1 oz. water is inhaled through a steam atomizer morning and evening.

QUERIES.

Qy. 1.—*Ph. J.* 27/4/78.—" Dispense without a separation—*Tinct. benzoin co., tinct. conii, of each* 1 *oz.; misce.* 1 dr. to be used for an inhalation as directed. First received from the prescriber, and it was perfectly clear; it was also dispensed in the North of England with the same result. I have tried it with both B.P. and P.L. tinctures of conium, and with each get a thick gummy precipitate which adheres to the bottom and sides of the bottle."

Ans.—"The Month."—"It is quite usual to send out tinct. benzoin co., either alone or combined with tinct. conii for inhalation. There must be a separation of resin to a much greater extent when the quantity ordered is mixed with hot water for inhalation, and it is possible to sacrifice the medicinal effect of a prescription by an endeavour to make it assume an elegant appearance. Both tinctures are B.P. preparations, and dispensed accordingly. The mixture must be cloudy and temporarily deposit some of the resin, which can, without difficulty, be shaken up on each occasion of its being used."

Qy. 2.—"**M. A. T.**," *Ph. J.*, 21/9/78.—"*Ol. pini sylvest.* (*Laritz*) 1 *dr.*, *tinct. benzoin co.* 1 *oz.*, *magnes. carb.* 30 *grs.*, *aqua puræ* 3 *ozs.* *M. ft. vapor.*"

Ans.—"The Month."—"The combination of ol. pini sylvestris cannot be made miscible, but if the oil be rubbed with the magnesia, and to it be added two drachms of mucilage previous to the addition of the tinct. benzoin co., a satisfactory product will be obtained which will continue in the same condition."

"Th. Green" remarks: "This may be dispensed so as to form a very fair mixture by triturating the ol. pini with the magnes. carb., using the light carbonate as ordered in the *Throat Hospital Pharmacopœia*, previously made of the consistence of cream with a little of the water, then gradually adding the rest of the water and lastly the tincture."

GARGLES.

This class of remedies, says the Editor of the *Throat Hospital Pharmacopœia*, is useful for affections of the mouth, palate and fauces, but he does not recommend gargles for diseases situated behind the anterior pillars of the fauces. Their use is also contra-indicated where movement of the fauces causes pain.

In using gargles, about half a fluid ounce should be taken in the mouth for each act of gargling, and this should be repeated four times on each occasion.

In prescribing gargles of the mineral acids, the patient should be directed to rinse the mouth with cold water after gargling, so as to avoid injury to the teeth.

The following are examples :—

Gargle of Tannic and Gallic Acid.—Tan. acid 360 grs., gal. acid 120 grs., water 1 oz. Rub the acid to a fine powder, and mix with the water. *Use.*—Is most useful for arresting hæmorrhage from the uvula or tonsils after excision. The patient should be directed to sip the mixture slowly, or hold it passively in the mouth till hæmorrhage is stopped. It should be made fresh in small quantities as required.

Gargle of Chlorate of Potash.—Chlorate 12 grs., water 1 oz.; dis. *Use.*—Mild antiseptic. Useful in aphthous and secondary syphilitic affections of the mouth, fauces and tongue, and in cases of salivation.

Gargle of Permanganate of Potash.—Solution of permanganate of potash B.P. 6 m., distilled water 1 oz.; m. Keep in stoppered bottle. *Use.*—Antiseptic.

Gargle of Chlorinate of Soda.—Sol. chlor. soda 24 m., water 1 oz.; m. *Use.*—Disinfectant. Very useful in sloughing phagedæna, and putrid condition of the throat.

Gargle of Iron Alum.—Iron alum 8 grs., water 1 oz.; m. *Use.*—Astringent.

Gargle of Carbolic Acid.—Acid 2 grs., glycer. 24 m., water 1 oz. *Use.*—Stimulant and antiseptic.

Gargle of Borax.—Borax 24 grs., glycer. 24 m., tinct. myrrh 1 oz.; m. *Use.*—Mild alkaline astringent.

QUERIES.

Qy. 1.—"**Mirens,**" *Ph. J.*, 8/9/77.—"To dispense without a deposit of resin on sides of bottle :—

"No. 1. *Tinct. myrrh* ½ *oz., alum* 120 *grs., aqua rosm. ad.* 8 *ozs.; misce ft. garg.*

"No. 2. *Tinct. guaiaci ammon.* ½ *oz., potass. chlor.* 1 *dr., aquæ ad.* 8 *ozs.*"

Ans.—"W."—"No. 1. Rub the alum with 2 scrups. of gum acacia, then add the tincture of myrrh and triturate; lastly, add the water gradually. After standing three days the only separation is a slight brown sediment which does not adhere to the glass. An elegant mixture may be made by using a small quantity of mucilage—2 drs. mucil. acaciæ will suffice for this formula—triturating in a mortar, adding the aromatic water in successive portions, and, finally, dissolving the salt in the full proportion of fluid. Such a simple addition cannot interfere with the intentions of the prescriber, but is almost requisite to effect a presentable mixture."

No. 2. "J. B. L. Mackay," suggests:—"First pour into the right sized bottle half an ounce of distilled water, and shake so as to wet all the inner surface of the glass; immediately thereafter add the tincture (previously measured), and agitate thoroughly, then gradually dilute the mixture with more water (shaking on each addition), until the proper quantity be reached. Lastly, add the potassic chlorate and dissolve."

Qy. 2.—"**A Novice**," *Ph. J.*, 11/5/78.—"To prepare accurately and clear:—*Acid salicylic* ½ *dr.*, *spt. vin. rect.* 4 *drs.*, *glycerine* 6 *drs.*, *aqua ad.* 8 *ozs.*; *m. ft. gargar.* Has been sent out by two West-End houses perfectly clear."

Ans.—"F. W. B."—"The above cannot be dispensed clear as written, but by the addition of a little borax (about 2 grs. to 1 oz.), a clear solution is the result."

The writer of "The Month" says: "It is quite possible that the previous dispenser had an eye to elegance, and sent out a clear mixture by dissolving the salicylic acid in about half as much spirit again, then adding the glycerine, and finally the water, but he should have received the prescriber's sanction to such an addition before adopting it."

COLLUNARIA, OR NASAL DOUCHE.

Not more than 20 ozs. of fluid should ever be used for a nasal douche, and 10 ozs. are generally sufficient. If an apparatus on the syphon principle be employed, it should be placed only just above the level of the patient's head, in order to avoid too great force of current. The temperature of the fluid should be about 90° F.

Collunarium Acid Tannici.—Acid 3 grs., water 1 oz. Dissolve. *Use.*—Astringent.

Collunarium Aluminis.—Alum 4 grs., water 1 oz., Dissolve. *Use.*—A mild astringent.

Collunarium Potas. Permanganatis. — Solution permang. potash B.P. 6 m., water to 1 oz.; m. *Use.*—Detergent.

Collunarium Quiniæ. — Sulph. of quinine ½ gr., water 1 oz. Dissolve by the aid of gentle heat. Useful in hay fever. It is generally sufficient to place a little in the palm of the hand, and draw it up through the nose.—*Throat Hosp. Pharm.*

NOTE.—"The Burroughs' Inhaler is an ingenious and convenient device for inhaling chloride of ammonia fumes, &c.; by its use the chloride of ammonia is brought into more intimate contact with the mucous surfaces of the passages of the nose and throat than by any other form of inhaler."—*Medical Press and Circular* Report.

LOTIONS, LINIMENTS, &c.

INTRODUCTION.

"Under this generic term," says Dr. Paris*, "which strictly signifies a *wash*, may be comprehended several species of medicines, calculated for the fulfilment of different indications, as *Embrocationes*, *Collyria*, *Fomenta*, *Linimenta*, *&c.* In some instances these applications are entirely local in their effects, as where a morbid action of the skin is changed by a stimulating lotion, as exemplified in the cure of psora by the *decoction of hellebore*, or the relaxed vessels of the tunica conjunctiva of the eye, by an astringent collyrium. In other cases, they operate upon parts not in contact with the remedy, through the medium of sympathetic communication, as where cholic and disorders of the bowels are abated by the application of warm fomentations to the surface of the abdomen, or where paralytic affections are relieved by pumping cold water on the part affected.

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* *Pharmacologia*, Eighth Edition, p. 292.

Embrocationes.—These, as the term denotes, are compositions of spirit, decoctions, infusions, or other liquids, applied by *sprinkling* or rubbing them on the affected part.

Linimenta are understood to differ from embrocations in consistence, the former being of an oily, or mucilaginous density, which increases their efficacy, by imparting a certain emollient power in addition to their other virtues. In popular language, however, liniment and embrocation are generally considered synonymous terms. They constitute a valuable class of remedies, and the observation which Dr. Percival has offered on their utility will merit the attention of the medical practitioner: "Volatile and anti-spasmodic liniments are highly useful remedies, and it is to be lamented that external applications of this kind are not more frequently employed, for there is just reason to apprehend that powerful effects might be expected from them in various diseases."

Collyria.—Liquid applications to the eyes. There are several different formulæ for lotions of this kind, some of which are simply astringent, while others combine also the virtue of a stimulant, or a sedative."

QUERIES.

Qy. 1.—"**J. Brooks**," *Ph. J.*, 15/9/77.—"*Lotio plumbi. acet. c. sulph. precip.* To make a lotion containing one part of each ingredient in 50 or 60 of lotion, and when shaken up form a smooth looking mixture."

Ans.—"O. WALLIS."—"By using lac. sulphuris instead of sulph. precip. B.P., and rubbing the ingredients down with a few drops of glycerine. The presence of calcium sulphate renders the mixture of a smooth milky appearance." "FELIX STEVENS" suggests the addition of sodium hyposulphite. "S. SAVAGE" says "O. Wallis has overlooked the action of sulphites on lead. The clear liquid on subsidence, made according to his directions, will give no sign of lead with iodide of potass. As in the case of some analyses of hair restorers, one was found which gave no precipitate with this salt. May not the ordinary lac. sulph. containing calcium sulphate have been used here? It was suggested hyposulphite of soda might have been used, but probably this equally with calcium sulph. would render the lead insoluble. If 'J. B.' moistens the sulph. precip. and plumb. acet. with spirit or tinct. canth., and rubs smooth with a portion of glycerine his difficulty will vanish." The writer of "THE MONTH" suggests that "the *pure* milk of sulphur B.P. should now be called the 'cream' of sulphur in contradistinction to the impure 'milk' of sulphur of commerce."

Qy. 2.—"**F. P.**," *Ph. J.*, 1/12/77.—"Should the undissolved acid be filtered out? *Acid salicyl.* 2 *drs.*, *aqua ad.* 8 *ozs.; m. ft. lotio.* A sufficient quantity mixed, an equal quantity of warm water to be used as directed."

Ans.—"THE MONTH."—"The dispenser is not justified in straining out the acid; it should be rubbed up without the application of heat, and a label 'shake the bottle' would indicate that the dispenser was aware of the undissolved acid. If a substance is dissolved by heat capable of recrystallization within the bottle, on cooling it will be impracticable to divide the quantities correctly. Being ordered to be used with *warm* water does not improve matters, for it requires to be heated to 70° or 80° Cent. to dissolve the acid, and when the temperature of the solution drops to 50° or 60° Cent. the acid begins to crystallize out."

Qy. 3.—"**A. Courtenay**," *Ph. J.*, 9/3/78.—"*Sod. bibor.* ½ *oz.*, *glycer. q.s.*, *aqua distil.* ½ *pint; m. ft. lotio.* Prepared by dissolving the borax in sufficient glycerine, adding aqua distil. to 10 oz., but after standing a week developed a fungoid growth."

Ans.—"THE MONTH."—"The fungoid growth must be due to foreign organic matter in one of the ingredients. It should be prepared by dissolving the borax in the water, adding perhaps 1 oz. of glycerine, and making up to 10 ozs. with distilled water."

Qy. 4.—"**Sub Umbra Floresco,**" *Ph. J.*, 14/9/78.—"*When liq. plumb. subacet. is ordered with aqua puræ ad., should pure or distilled water be used?*"

Ans.—"THE MONTH."—"The object aimed at is to make the lotion as free as possible from milkiness. If the water be distilled there will, from the carbonic acid absorbed by it, result a little milkiness. In freshly distilled water the carbonic acid is best removed by boiling previous to its being used for lead lotions."

Qy. 5.—"**Major,**" *Ph. J.*, 28/9/78.—"How to dispense?—*Lapis divin.—Aqua rosæ ad.* 4 *ozs.*; *m. ft. lotio.* To bathe the eyes occasionally."

Ans.—"M.R.C.S. ENG.," says: "Two to 3 grs. in 1 oz.," and adds "Lapis divini is prepared thus: cupri sulph., pot. nit., aluminis, pts. æq. Fuse together in a crucible."

Qy 6.—"**A. W.,**" *Ph. J.*, 23/3/78.—"The following was sent out perfectly clear by one of the first houses in London:—*Liq. plumb. diacet.* 1½ *dr., acid. carbol.* 15 *grs., aq. rosæ dist. ad.* 3 *ozs.*; *m. ft. lotio.* A few drops to be poured into the ears night and morning. A. W. failed to obtain this result without filtration. Should this be done?"

Ans.—"THE MONTH."—"There must necessarily be a precipitate on adding carbolic acid to liq. plumb. diacet., and it cannot be sent out clear; neither should the sediment, carbolate of lead, be filtered out. If a dispenser studies the variety of combination which comes daily under his notice, and the decompositions which take place, he will be able to combat these minor difficulties, be in a position to state to his customers that he has accurately dispensed the prescription; and with average intelligence and a little chemical knowledge to explain why a certain result ensues, and that if correctly dispensed, no matter from what 'London house' it emanates, it must have a similar appearance."

"J. B. L. MACKAY," however, observes that "if freshly distilled rose water, free from carbonic acid be used, and the lead solution likewise be clear, the resulting lotion would be free from opacity or precipitate."

Qy. 7.—"G.," *Ph. J.*, 6/4/78.—"Am fairly puzzled by the second article :—*Hyd. bichlor.* 4 *grs.*, *tinct. sap. virid. co.* ½ *oz.* ; *aqua* 1½ *oz.* For external use night and morning. (A New York prescription, but *tinct. sap. virid. co.* is not in the *U. S. Pharmacopœia*)."

Ans.—"H. Brown."—"It is quite evident tinct. sap. virid co. is some proprietary article; or, what is more likely, the tinct. verat. virid. is the preparation meant." "C. J., Bury St. Edmunds," says that : "Tinct. sap. virid. co. is a solution of green soap in spirits of wine (1 in 2 of spt. vin. rect.), scented with oil of lavand. (2 drs. in 1 pint), as green soap is seldom to be procured. I use freshly prepared soft soap B.P. The form given by 'G.' I have often prepared for ringworm and scabies."

"P.W. Bedford" appends the formulæ in use for (1) Tinct. sapo virid. co. :—Sapo virid., alcohol, ol. cade, of each 1 oz.; oil lavand. 1½ drs. Mix. (2) Tinct. sapo virid. :—Sapo virid. 1 oz., alcohol 2 ozs., ol. lavand. 1 dr. Mix. Both the above are used in skin affections, and are regularly dispensed under the titles given. Sapo viridis is the officinal soap of the *German Pharmacopœia.*

The writer of "The Month" remarks that : "It is not quite clear—as suggested by 'C. J.'—it is merely a solution of green soap in spirit; why it is called a compound tincture; and further it is scarcely probable that the bichloride of mercury would be combined with the tinct. of soap. Neither can it be tinct. verat vir." "M. H. T." adds : "In America sapo mollis is called sapo niger and sapo viridis. The tinct. sap. virid. co. is in all probability a spirituous compound of this soap."

The following formulæ for "sapo viridis" are condensed from the *New York Drug Circular*, &c. :—

Green Soap.—No. 1.—Olive oil 16 ozs. troy, caustic potash 6 ozs., water q.s. Dissolve 5 ozs. of the potash in 2 pints of water ; add 8 ozs. of that solution to the oil in a suitable porcelain vessel, and place over a moderate fire ; when the mixture has become quite thick, gradually add the remainder of the potash solution. Continue the heat, occasionally stirring until the mass has assumed a *yellow* transparent gelatinous form. Dissolve the remaining ounce of potash in 2 pints of water, and add it to the mass.

Lastly, evaporate to the proper consistence. The product is transparent and *yellow.—Drug Circular.* If, during the process given by Mr. E. B. Shuttleworth, of Toronto, the mass becomes too thick to stir easily, add a little water. Allow the soap to become cool, but before it sets work in the colouring matter, which must be previously prepared by boiling finely powdered indigo with water until the colour is formed into a thin paste. 20 grains of indigo, boiled with 1½ ozs. water, until the mixture is reduced to about 1 fl. oz. will answer for the soap from 4 ozs. of oil. The soap must not be too hot, nor must it be reboiled after adding the colouring matter, or the green will be destroyed.

No. 2.—In countries where oil of hempseed is a common article of commerce, green soap is usually made from it of a nice dark green colour. The following is a formula recommended by Herman Betz :—Oil linseed 1 pint, solution of potash U.S.P. 1 pint, colouring matter precipitated from a solution of indigo by lime q.s., oil of citronella 10 drops. Similar directions as No. 1, adding the colouring matter and ess. oil last, with constant stirring.—*Drug Circular*, March, 1878.

Qy. 8.—"**Burton**," *Ph. J.*, 13/10/77.—"Made 2 pints of *lin. sapon. B.P.*, but with *sapo animalis B.P.* In a few days became solid, and could not be rendered fluid afterwards."

Ans.—"THE MONTH."—"Sapo animalis is a soda soap made with purified animal fat, consisting principally of stearin, and this forms a stearate of soda, nearly insoluble in spirit, whereas sapo durus B.P. is made with olive oil and soda, and forms an oleate of soda, soluble in rectified spirit. Sapo animalis cannot be substituted for sapo durus in lin. sapon. B.P."

Qy. 9.—"**F. H. B.**," *Ph. J.*, 17/11/77.—"To form a homogeneous mixture :—*Tinct. canthar.* 2 *ozs.*, *liq. ammon. fort.* 2 *ozs.*, *vaseline* 2 *ozs.*, *aqua ad.* 30 *ozs.* ; *m. ft. lotio.*"

Ans.—"THE MONTH."—"This cannot be mixed without a separation. The best method, but one that would require the sanction of the writer, would be to add about equal parts of sapo mollis B.P. and vaseline, rub them together, then add the ammonia, afterwards the water, and lastly the tincture. Even then a certain amount of separation will take place. Vaseline is a substance of indefinite composition, and the usual rules will not apply here."

Qy. 10.—"**Assistant**," *Ph. J.*, 27/10/77.—"To mix without separating:—*Ol. macis* 1 *dr.*, *ol. olivæ* ½ *oz.*, *liq. ammon.* 3 *drs.*, *spt. rosmar.* 2 *ozs.*, *aqua rosæ* 4 *ozs.*; *m.*"

Ans.—"W. H. R.," *Ph. J.*, 3/11/77.—"Melt the ol. macis in the ol. olivæ with gentle heat; then place in a mortar and triturate well, adding very gradually the liq. ammon., then the aqua rosæ, and lastly the spt. rosmar. to form an emulsion."

Qy. 11.—"**Aderyn**," *Ph. J.*, 3/11/77.—"The following two queries present the same difficulty:—*Liq. ammon.* 1½ *ozs.*, *ol. macis* ½ *oz.*, *ol. amygd. dulc.* 1 *oz.*, *spt. rosmar.* 2 *ozs.*, *eau de Cologne* 4 *ozs.*, *aqua ad.* 12 *ozs.*; *m.*"

Ans.—"In this the same rule applies. The addition of spirit will cause more or less separation, and the time at which it occurs will mainly depend on the relative proportion of the spirit to the water."

Qy. 12.—"**H. B. Sainsbury**," *Ph. J.*, 12/1/78.—"To form an 'inseparable mixture.' *Ol. amygd. dulc.* 1 *oz.*, *liq. ammon. P.L.*, 1 *oz.*, *spt. rosmar. P.L.*, 6 *ozs.*, *ol. ess. limon.* 1 *oz.*; *m. ft. lotio.* Sent out clear by a first-class London house."

Ans.—"THE MONTH."—"With regard to the two former queries, a better result is obtained by rubbing up the oil of mace with the ammon. and oil alternately, then adding the water, and finally the spt. of rosemary; adding, in reply to the above, if correctness be sacrificed to appearance, by making the rosemary with a little oil of rosemary and water, such a separation will not take place. The first-class London house comes to the front again, but the dispenser may rest assured that if the lotion was sent out from such an establishment a separation did take place."

Qy. 13.—"**J. W. Barnes**," *Ph. J.*, 22/12/77.—"The *modus operandi* of mixing the following:—*Ext. belladon.* 1½ *drs.*, *ol. hyoscyami* 1 *oz.*; *m. ft. liniment.*"

Ans.—"THE MONTH."—"The extract of belladon. should be rubbed down with sufficient water, so that it may be diffused in the oil hyoscyami. An emulsion must not be expected, but a minute division of the liquefied extract, and the mixture should be shaken before use."

Qy. 14.—"**Apprentice,**" *Ph. J.*, 11/5/78.—"To make a permanent emulsion :—*Ol. terebinth.* 3 *ozs.*, *acid acet. fort.* 5 *drs.*, *aqua rosæ* 2½ *ozs.*, *ess. limon.* 4 *scr.*, *vitelli ovi one ; m. ft. emulsio.*"

Ans.—"THE MONTH."—"Rub the yolk of egg in a mortar with the acetic acid, previously mixed with an equal quantity of rose water, put into a bottle of double capacity required, the turpentine gradually added, with agitation after each addition, and finally the essence of lemon. Its emulsive character improves by keeping."

This resembles the famous "St. John Long's Liniment," and "Stoke's Liniment," and is an excellent application.

Qy. 15.—"**Sub. Umbra Floresco,**" *Ph. J.*, 27/7/78.—"*Opodeldoc*: What should be dispensed or retailed for this article ?"

Ans.—"J. F. R., Stockport."—"In Gray's *Supplement*, opodeldoc is the synonym given for lin. sapon, which I have always given."

R. E. TAYLOR says : "The Board of Trade orders a mixture of tinct. opii and lin. sapon co. to be marked 'opodeldoc.'"

H. BROWN remarks : "I find a very old formula in the *Ed. Pharm.*, viz., *Bals. saponaceum opodeldoc* : *Spanish soap* 1 *lb.*, *camph.* 2 *ozs.*, *ol. rosmar.* ½ *oz.*, *ol. origanum* ½ *oz.*, *spt. vin. rect.* 4 *pints.* Digest the soap in the spirit till dissolved, add the camph. and oils. It forms a thick opaque liniment. It is said Mindererus invented a kind of plaster for external injuries which he called opodeldoc. A dispenser would be justified in sending out the lin. sapon. B.P. for opodeldoc."

Qy. 16.—"**Lin. Æruginis,**" *Ph. J.*, 7/9/78.—"Should old liniment æruginis, containing a deposit, be shaken up before using for dispensing ?"

Ans.—"H. BROWN, L.R.C.P., Northallerton."—"Lin. æruginis was officinal in the *L.P.*, and a difficult preparation to make satisfactorily. Where practicable, it should be made fresh; but, if kept long, the deposit should be shaken up. The writer of THE MONTH observes: 'In a letter from Mr. Quckett (*P.J.*) microscopic examination of this liniment reveals the presence of very finely divided copper which had been reduced from the subacetate by the saccharine principles of the honey employed in its preparation, and to which the deposit is due.'"

SUPPOSITORIES AND PESSARIES.

Condensed from the CHEMISTS' AND DRUGGISTS' DIARY.

The chief points to be observed are: first, the complete incorporation of the medicinal ingredients, as an impalpable powder with the melted mixture of cocoa-butter and spermaceti; second, the chilling of the melted mass to such a point that while it will flow from the cup or capsule, it will not allow the rapid subsidence of the suspended powder; third, when using metallic moulds, to have them so refrigerated in advance as to harden the suppositories almost immediately on contact.

It has been found that pure cocoa-butter, or with the addition of wax, is not so good for the formation of suppositories as with a proportion of spermaceti, which is stated in Parrish's *Practical Pharmacy* to have the merit of congealing much more rapidly than wax, and hence favours the rapid and complete solidifying of the cones. The proportion of spermaceti may be varied according to the haste with which they are to be completed, and the exposure to heat to which they are subjected afterwards. In summer, one-fifth of the whole may be spermaceti; in winter, one-sixth.

There are two ways suggested for medicating suppositories. The most ready method is to introduce the medical ingredients, in powder or mass, into a conical opening in the base of the finished and hardened cone, which is then closed up with the hardened cocoa-butter. The other and preferable process is to mix the dry and powdered ingredients with a portion of the melted fat by thorough trituration, and then to add the remainder, taking care to stir the mixture until it has sufficiently cooled and thickened to prevent the subsidence of the powder, and then to form into moulds. Some extracts may be incorporated very satisfactorily by rubbing them with a spatula on a tile, first with a drop of water, then with a little of the melted cocoa-butter. The aqueous extract of opium, which is much prescribed in this form of preparation, is best dried on a clear, dry day upon a pill tile reduced to a very fine powder, and triturate with sufficient melted cocoa-butter, so that 5 grs. of the mass contain one of the extract. In this state it is not affected by the weather, and is readily distributed either alone or with acetate of lead, tannin and other astringents.

Substances soluble in cocoa-butter may be incorporated with great facility by digesting them in melted cocoa-butter, previous to adding the spermaceti. Where there is liability to the presence of crystals of nitrate of potash, and in old extracts, or where any insoluble portion would interfere with the perfect soundness of the suppositories, the melted material should be strained before moulding it.

The mould should be thoroughly chilled, either by placing it in iced water, being careful to wipe it thoroughly dry before using, or in winter by placing it in the open air. When the suppository has quite cooled, it will fall out by inverting the mould and striking it suddenly on a slab or tile.

Another difficulty is, mixing with the theobroma unmiscible substances, *i.e.*, *aqueous solutions*, *extracts*, *&c.* This is best overcome by first rubbing the solution or extract with a small portion of the unmelted theobroma, until the mass is thoroughly homogeneous, when it seldom fails to incorporate with the melted portion. For example, extract of belladonna is not unfrequently ordered; this fails to mix in any proportion with the melted theobroma, nor does the addition of such solvents as water, spirit, oil, glycerine, &c., which sometimes in other cases assist, at all facilitate its incorporation. If, however, the extract be first thoroughly rubbed up with a little theobroma in a mortar, and then added to the melted portion immediately before pouring into the moulds, a very superior cone will be produced.

Suppositories made with cocoa-butter only are difficult to remove from the mould. The following method has been found to overcome the difficulty :—The cocoa-butter to be melted in a dish, which is placed temporarily over a saucepan of water; as soon as melted, place the powdered ingredients, or if extracts (previously rubbed smooth with a few drops of water on a slab), and add only just sufficient of melted butter to rub the powder, &c., to a smooth paste, then add more, taking great care that it is not too hot. When about half has been added stop, and return to the dish the mixture of butter and powders, or extracts, and stir constantly until nearly cold; if lumpy, hold the dish above the escaping steam, and rub the lumps down (it is very important not to reliquefy the mass), when the lumps are thoroughly removed, pour into the moulds; perhaps only four to six holes are filled before the mass is too solid to pour out. This is just as it should be. Now hold the dish again about four or six inches above the escaping steam, stirring till it is liquid enough to pour about six more, and so on.

It is most essential that the mass should be poured into the moulds at a medium temperature, neither too hot or too cold, first breathing into each cavity at the moment of pouring, so as to cause a thin film of moisture to adhere to the sides of the metal. If expeditiously and properly done the cones, when cool, should slip from the mould without the least trouble, having a beautiful polish, and, what is more important, of uniform composition, and not with the active medicinal agent all concentrated at the apex, as is always the case when the heat applied has been excessive.

The settling of the active ingredient at the apex of the cone may always be avoided if care be taken to have the substance first thoroughly impalpable, and then incorporated with a small piece of the theobroma, previous to adding to the melted portion, at a temperature a little over the melting point. There is another evil of overheating, where powders of a ponderous nature are ordered, such as bromide of potass, iodide of potass, or acetate and iodide of lead, viz., the impossibility of an equal division of the substance where a number of balls are being made—the powder falls to the bottom of the dish, and no amount of stirring or dexterity will ensure its equal distribution.

The following are the strength of some non-official balls, as ordered by a leading physician :—

	Pessaries.		Suppositories.
Atropiæ (Belladonna)...	$\frac{1}{20}$ gr.	in each	—
Belladonna Extract ...	5 grs.	,,	½ gr. to 2 grs.
Opium....................	2 ,,	,,	2 ,,
Bismuth Ox.	15 ,,	,,	10 ,,
Zinc Ox.	15 ,,	,,	10 ,,
Alum	10 ,,	,,	—
Alum and Catechu......	10 ,, of each	,,	—
Acetate of Lead.........	7½ ,,	,,	—
,, ,, and Opium	5 ,, & 2 grs.	,,	—
Gallic Acid...............	10 ,,	....	—
Iodide of Lead	5 ,,	....	—
Sulphate of Zinc	10 ,,	....	2 grs.
Iodide of Potass.........	10 ,,	....	—
Bromide of Potass	10 ,,	....	—
Gall and Opium.........	—	....	5 grs. and 1 gr.
Santonine	—	....	3 grs.
Aloin	—	....	1 gr.

ERGOTINE PESSARIES.

Qy 1.—"**Dispenser**," *Ph. J.*, 29/6/78.—"The best way to prepare the following :—*Ergotina* 10 *grs., acid tannici* 10 *grs., ol. theobroma q.s. ; ut. fiat pessaria.*"

Ans.—"F. W. Branson."—"If 'Dispenser' proceeds in the following manner a thorough admixture results. To the ergotine in a mortar, add water to a semi-fluid consistence, with this mix gradually about half the ol. theobrom. previously liquefied. The tannin in fine powder is to be mixed with the remainder; now transfer the congealed ergot portion to the tannin mixture, and apply just sufficient heat to enable it to be poured into moulds which may be chilled if necessary, the addition of lard and wax is unnecessary in the majority of cases, as morphia, &c., may be rubbed down with a little of the melted ol. theobrom. on a warm slab."

The writer of "The Month" says: "However carefully and minutely the directions may be given for pessaries such as these, success will very much depend on the intelligence which the manipulator brings to bear on the subject.

A practised hand at pessaries will suit the temperature to the composition, and obtain quickly and certainly a satisfactory result, whilst another will fail successively with the same ingredients for want of the necessary practical knowledge. The detailed instructions so kindly forwarded by Mr. Branson are all that could be desired, and if intelligently followed will result in success ; oil of theobroma is ordered and is quite unobjectionable, there is therefore no occasion for the admixture or substitution of wax and lard in the preparation of these pessaries.

OINTMENTS.

On the preparation of ointments, Mr. W. J. Halliday remarks (*Pharm. Jour.*) : "Ointments are often prepared on a slab; in most cases a mortar answers better. I passed through Clerkenwell some years ago, and observed an abortive attempt made to prepare about 2lb. of ung. sulph. co. on a slab, the hellebore and sulphur were in distinct lumps, and the lard frigid. How much more satisfactory had the powders been mixed in a mortar, and melted lard added.

An ointment from the following formula is more frequently dispensed by mixing; but a better plan is to melt the lard, add the oil, and when nearly cold stir in the precipitate :—Hyd. nit. ox. lev. 2 scrup., adipis, ol. amygd, of each 1 oz.

Expressed oil of mace and other fatty substances mix much better with lotions if previously melted than if rubbed cold.

Ung. potassii iodidi ; Ung. hydrarg. perchloridi ; are best prepared if the salts are dissolved in a little water in a test-tube, and ung. camphoræ can be prepared perfectly smooth if the camphor is dissolved by a gentle heat in the lard.

Ointment of Chrysophanic Acid has been recommended as a cure for *acne rosacea*, and the fixed oil of stavesacre as a substitute for sulphur ointment in destroying animal parasites, by Mr. Balmanno Squire. Dr. E. Woakes has found hydrobromic acid successful in certain forms of *tinnitus aurium*.

Soothing Ointment.—Dr. McCall Anderson gives the following as a most valuable application to inflamed surfaces that he has ever tried:—Bismuth oxide 25·0, acid oleici 200·0, ceræ alb. 75·0, vaseline 225·0, ol. rosæ 0·25.—*The Specialist.*

Comp. Mercurial Ointment.—Liq. antim. terchlor. (butter of antimony) 5 dps., hyd. ammon. chlor. 20 grs., hyd. nit. ox. 15 grs., potass subcarb. 1 dr., adipis 1 oz. This ointment retains its pink colour if the carbonate of potass be rubbed down with a little lard, but if dissolved in a few drops of water, the final addition of the liq. antim. terch. produces a dirty brown colour, due to the formation of ferric hydrat., iron always occurring in commercial samples of "butter of antimony." *In a fatty medium the incompatibles are unable to react.* This is further instanced by the fact that tannin ointment may be made with a steel spatula with impunity, as no blackening occurs unless water is present.—*Chemists' and Druggists' Diary.*

Thymol-Vaseline Ointment.—Dissolve 20 grs. of thymol in 1 oz. of vaseline. It is useful in eczema, and as a parasiticide. It is said that thymol has the property of immediately removing the smell of tobacco.—*Phil. Med. Times.*

Ung. Hydrarg. Iod. Rub.—Red iodide of mercury 1 part, simple ointment 9 parts. Mix.

NOTE.—This is three times stronger than that of the B.P., and is the preparation which has found so much success in India, as an external application in bronchocele (a tumour situated on the fore part of the neck, principally occupying the thyroid gland. The Swiss call it *goitre*). The ointment should be made fresh when required for use.—*Throat Hosp. Pharm.*

Ung. Hyd. Oleatis, 20 per cent.—Yellow oxide of mercury 2 drs., oleic acid 10 drs. To the oleic acid, kept agitated in a mortar, sprinkle in the oxide of mercury gradually, and triturate frequently during 24 hours, until it is dissolved and a gelatinous solution formed. *Use.*—The same as lin. hyd. oleatis, but stronger.—*Univers. Col. Hosp. Pharm.*

Vaseline Ung. Hydrarg.—A correspondent, in *New*

Remedies, suggests the following formula:—Mercury and lard, of each 1lb.; vaseline 2 ozs., and states it acts like magic, the mercury disappearing in about ten minutes, making a beautiful ointment, lighter in colour than usual, but the colour deepened in a short time to its ordinary tint.

QUERIES.

Qy. 1.—"**Occident**," *Ph. J.*, 30/6/77.—"*Ung. sulph. hypochlor crass.* When this ointment is prescribed, what proportion of sulph. hypochlor. should be used? What chemical article is meant?"

Ans.—"S. L. S." observed: "I have dispensed the prescription ung. sulph. hypochlor. in the proportion of one drachm of the sulphur preparation to one ounce of benzoated lard. This was according to the direction of one of our leading surgeons."

E. S. Balchin states: "The following is given in Beasley as Dr. Copland's formula:—Hypochloride of sulphur 1 dr., spermaceti ointment 1 oz. Mix."

Qy. 2.—"**E. Bevan**," *Ph. J.*, 8/9/77.—"*Ung. Hyoscyami.* Formula required?"

Ans.—"W. Gardner Bank, Barnard Castle," says: "Ung. hyoscyami is ordered in the Pharmacopœia of the Bristol Royal Infirmary as under:—Hyoscyami foliorum contusorum 1 lb., adipis præparatæ 1½ lb. Boil till the leaves become soft, and squeeze the product through linen."

Mr. Stevens remarks:—"There is also a compound ointment containing opium, acetate of lead, and powdered galls added to the above."

F. J. Brookes refers E. B. to the following recipe given in Beasley's *Pocket Formulary*:—"Fresh henbane leaves, bruised, 2 lb., olive oil 4 lb. 9 ozs., wax 1 lb. 3 ozs. Digest for some hours, boil for a quarter of an hour and strain."

But J. B. L. Mackay says: "It would be rather troublesome to make it on the small scale after Beasley's formula. It might, however, be extemporized thus: Extracti hyoscyami 5½ grs., unguenti simplicis 1 oz. Misce secundum artem. This gives a nearly equivalent strength, and would doubtless prove equally efficacious."

COOKE & Co. suggest some of the following formulæ :—"*Dorvault*—Ext. hyoscyam. 1 dr., adipis 1 oz. *Middlesex Hospital*—Ext. hyoscy., adipis, of each ½ oz., glycerine 1 dr. *Pharmacy Wirtemb.*—Fol. hyoscyam. rec. 1 lb., adipis 10 ozs., ol. sem. hyoscy. 2 ozs. *Van Moas*—Ol. sem. hyoscy. 4 ozs., feculæ hyoscy. 1 oz., ceræ albæ 1 oz. *Geiger*—Fol. hyoscy. rec. 2 lb., ol. olivæ 4 lb. 9 ozs., ceræ flav. 1 lb. 3 ozs."

Qy. 3.—"**Apprentice,**" *Ph. J.*, 22/12/77.—"*Ung. hyd. nitrici oxydi* 2 *drs.*, *ung. galeni* 2 *drs.* M. To be applied to the edges of the eyelids. Required, a form for ung. galeni."

Ans.—"W. A. POWELL" says : "The formula of the French *Codex* for ceratum galeni, or Galen's cerate, is as follows :—Ceræ alb. 1 oz., ol. amygd. dulc. 4 ozs., aquæ rosæ 3 ozs. Heat in a water-bath the wax, oil, and half the rose-water, until the wax is melted ; pour into a warm marble mortar and stir the mixture continually. When nearly cold beat in briskly, little by little, the remainder of the water."

The writer of "THE MONTH" observes : "Ung. galeni is now understood to mean an ointment free from chemical ingredients, and would be fairly represented by simple ointment or cold cream."

Qy. 4.—"**T. Hall,**" *Ph. J.*, 22/12/77.—"Which preparation would be correct to use in the following prescription, hyd. sulphat. or hyd. lak. sulph. (turpeth mineral), B.P. ? :—*Potassii iodidi* 1 *dr.*, *hydr. disulph.* 1 *scr.*, *ung. cetacei ad.* 1 *dr.* ; *m. ft. ung.*"

Ans.—"THE MONTH."—"Hyd. disulph. evidently means hydrarg. disulphid. or vermilion. It cannot be either hyd. sulphat., or turpeth mineral, which is an oxysulphate of mercury."

Qy. 5.—"**Inquirer,**" *Ph. J.*, 16/2/78.—"*Ung. hyd. nit. B.P.*—Is it proper to heat the solution of mercury in nitric acid till the reddish-brown fumes cease to be given off ? Or should the ointment contain free nitric acid ? The nitric acid ordered in B. P. is much in excess of what would dissolve the mercury."

Ans.—" The Month."—" The inquiry is 'if it is proper to heat the *solution* of mercury in nitric acid until the reddish-brown fumes cease to be given off?' This mode of procedure would be incompatible with the B.P. directions—' Dissolve the mercury in the nitric acid with the aid of a *gentle* heat,' and further, while the mixture of fat and oil is hot 'add the solution of mercury.' According to Dr. Pereira, the theory of the process is as follows:—" By the mutual action of mercury and strong nitric acid, a nitrate of the binoxide as well as of the protoxide of mercury is formed, whilst binoxide of nitrogen is generated. Part of the latter escapes, and combining with atmospheric oxygen forms nitrous acid; the remainder acts on the free nitric acid, and forms with it hyponitrous acid, or nitrous acid.' Whatever the theory of the process may be, practically it is no easy matter to make this ointment of uniform colour and consistence. The ointment, whilst of good colour, usually contains free nitric acid, and many pharmacists are of opinion that the value of this preparation, as an application to the eyes, has in some measure been sacrificed to its appearance."

" Henry Brown, Northallerton," says: " In answer to 'Inquirer' let me say it is not necessary to heat the mercuric solution until all the fumes are given off, because there is no use in applying heat immediately the action of solution commences. There is nothing to be gained by too hasty solution, and the mercury and acid should at first be placed in a warm place, say at the side of a fire, so as to allow the fumes to escape up the chimney, and when all the mercury is dissolved the temperature of the solution, if necessary, must be raised to 180° or 190° F. The object of having nitric acid in excess, is to prevent the formation of suboxide of mercury, which is subsequently converted into metallic mercury. The whole subject is well worth close study; and I would recommend 'Inquirer' to carefully peruse the article in Christison's *Dispensatory*, as giving by far the best account with which I am acquainted, Pereira not excepted. As it may not be close to the hand of 'Inquirer,' I may state that the probable composition of citrine ointment is that of a mixture of nitrate of binoxide of mercury with oleic and stearic acids, and the fatty acid called elaidic. Nitric acid attacks oleic acid with great violence, and a whole series of volatile acids are formed, and any work on chemistry will supply 'Inquirer' with all desirable information on this point. It is the nitrous acid which converts oleic into oleidic acid, which is an allotropic form of oleic acid. The Dublin formula was prepared without the aid of heat in dissolving the mercury, and is supposed to have also contained some nitrate of the protoxide of mercury. I have prepared the ointment upon many occasions, and found the best temperature for combining the mercuric solution with the oily matters to be 180° or 185° F. I had seldom any difficulty; but from first to last the undivided attention of the pharmacist should be devoted to the subject in hand, and the ointment should be stirred with a bone, or ivory, or glass stirring rod until almost cold, and only one way. It should be of the consistence of freshly made butter."

The editor of the *Pharmaceutical Journal*, in reviewing M. Faliere's paper on the "Use of Nut Oil in Pharmacy, &c.," published in the *Bull. des Travaux de la Société de Phar. de Bordeaux*, says the author's investigation of pure olive oil and the oil of the ground nut (*Arachis hypogæa*) found that the arachis oil possesses a great aptitude for the nitric solidification. Hence he conceived the idea of suppressing entirely the lard in the preparation of citron ointment. The product so obtained appeared to present such marked advantages as to induce him to make known the process:—*Mercury* 5 parts, nitric acid (sp. qr. 1·42) 10 parts, nut oil 100 parts. Dissolve without heat the mercury in the acid; pour the mercurial solution into the oil, agitating from time to time with a glass rod. After two or three hours, according to the quantity operated upon, and at the temperature of about 20° C., the mixture begins to take a milky consistence which lasts for about an hour, then thickens to that of soft butter. The product does not set so rapidly as the official one; at the end of 24 hours it is easily divided by a wooden knife. Its consistence is then similar to that of cacao butter in the summer. Two or three days afterwards it appears to attain its maximum of firmness. Compared with the *Codex* preparation, the author considers that the ointment made with nut oil has greater cohesion, is not friable, and appears much better adapted for friction, as it melts and spreads upon the skin with greater facility.*

On the mercurial ointments, Mr. C. Fredigke remarks in the *Pharmacist*, Feb., 1872, that ung. hydrarg. oxidi rub. may be preserved for an indefinite length of time by keeping it beneath a layer of glycerine half an inch thick. He has found ointment so treated to have just as fine an orange chrome colour after being kept eighteen months as when first made. He says, also, that ung. hydrarg. nitratis may be prevented from becoming hard by incorporating with it while warm one-fourth of its weight of glycerine in small quantities at a time, rubbing after each addition until all is extinguished. Ointment so prepared does not lose its fine citrine colour till after a year or more.

Qy. 6.—" **Ignoramus**," *Ph. J.*, 23/2/78.—" How to prepare: *Hyd. ammon. chlor.* 25 *grs.*, *ung. cetacei* 7 *drs.*, *glycerinum* 1 *dr.*; *ft. ung.* Should this be prepared cold or warm ? "

Ans.—" E. A. Hanson, Leeds."—" The following prescription is a similar one to that referred to by 'Ignoramus':—*Zinci oxyd.* 1 *dr.*, *ung. cetac.* 7 *drs.*, *aqua rosæ*, *glycerin*, *of each* 1 *dr.*; *ft. ung.* First, melt the ung. cetac. to a creamy consistence, next add the aq. rosæ and glycerine (previously mixed), and stir well together. Lastly, add the zinci oxyd. well pulverized, and stir until cold. The above method yields a very good ointment, and upon experience I find that 'Ignoramus' would be able to dispense his prescription in a similar manner to the above."

" The Month."—" It is an important point in making ointments to use a good large mortar. The hyd. am. chlor. should be rubbed to a smooth condition with the glycerine, and the ung. cetacei being subsequently added will make an unexceptionable ointment. The result is not so satisfactory when the ointment is made on a slab, and there is an objection to heating the ointment, since it promotes oxidation and is quite unnecessary. Sometimes a trifling addition to a prescription requires a change in the method of procedure in dispensing it. The following is an illustration of this: zinc ox. 1 dr., ung. cetac. 7 drs., aq. ros. 1 dr., glycer. 1 dr.; this formula differs from that just commented on by the addition of aq. rosæ to the glycerine. In this instance the plan of melting to a creamy consistence may be adopted, but certainly not the addition of the oxide of zinc in powder. The zinc should be rubbed in a mortar with the glycerine and rose water till quite smooth, and the ung. cetacei being added, the whole should be stirred till cold. There is, however, even here no necessity for melting the ointment; the same plan may be adopted as in the preceding case, namely, the use of a good-sized mortar."

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* *See* " Miscellaneous Formulæ "—*Ung. Hydrarg. Nit.*

Qy. 7.—"**Querens**," *Ph. J.*, 16/3/78.—"*Boracic Acid Ointment* (*Lister's*): —Take of *boracic acid in fine powder* 1 *part*, *white wax* 1 *part*, *paraffin* 2 *parts*, *almond oil* 2 *parts*."

Ans. — "J. A. Cuffe."—"Dissolve the wax and paraffin in the almond oil, transfer to a warm mortar, add the boracic acid in fine powder, and rub well together for some time until it becomes creamy, transfer to a cold mortar in pieces about an ounce at a time, and continue the trituration until a smooth ointment is formed. This ointment will keep good any length of time. It is advisable to warm the acid before adding it to the fats."

Qy. 8.—"**H.**," *Ph. J.*, 23/3/78.—"Can *ung. plumbi co.*, *L.P.*, be made of a soft consistence? I have tried it several times and find that even with half the quantity of emp. plumbi it becomes hard and crumbly. The physician who orders it tells the patient that it can only be made by one firm in London."

Ans.—"The Month," *Ph. J.*, 30/3/78.—"Ung. plumbi co. L.P., is to some extent dependent on the make of the emp. plumbi. It was a favourite ointment with the late Sir Benjamin Brodie, and he recommended that made by one particular house. Probably the dispensing of the B. P. formulæ being recognized, great attention to the preparation enabled that house to make a more satisfactory ointment."

Qy. 9.—"**S. J. W.**," *Ph. J.*, 20/7/78.—"The reason of the following ointment turning a bright yellow colour? *Liq. plumbi diacet.* 1 *dr.*, *ung. cetacei* 1 *oz.*; *m. ft. ung.*"

Ans.—"THE MONTH."—"This ointment has long been known to turn yellow. Gmelin says that this salt (subacetate of lead) produces red and yellow colours with many oils, both fixed and volatile. The change is most probably due to a separation of the protoxide of lead from the subacetate."

Qy. 10.—"**E. A. T.**," *Ph. J.*, 7/9/78.—"*Ung. sulph. perchlor. co.* (*E. W.*) ½ *oz.* Formula required?"

Ans.—"H. BROWN" says:—"E. A. T. can be best answered by saying that the writer meant hypochlor. The formula of Mr. Erasmus Wilson (E. W.) is, hypochloride (hypochlorite) of sulphur 2 dr., subcarbonate of potash 10 grs., lard 1 oz., oil of bitter almonds 10 drops. M. Useful in acne. I may state that the hypochlorite is very prone to explode, and in opening a fresh bottle great care should be exercised."

Qy. 11.—"**Sub Umbra Flores**," *Ph. J.*, 14/9/78.—"*Ung. acidi carbolici*—This ointment being often prescribed, what strength should it be dispensed?"

Ans.—"F. J. K."—"This ointment is prepared according to the formula of the Royal Bristol Infirmary, and consists of:—Glycerini acidi carbolici ½ dr., ung. simplicis ad. 1 oz.; misce."

"F. J. KILNER" sends the formula of St. George's Hospital:—"Acidi carbolici 10 gr., hydrargyri ammonia-chlorid. 10 gr., axungiæ 1 oz.; misce."

"H. BROWN."—"The formula for carbol. acid ointment, according to that given in the *U. S. P.*, is carbolic acid 60 grs. and ointment 420 grs. Benzoated lard should be used, or any simple ointment. Squire gives 30 to 60 grs. to 1 oz. of benzoated lard. If applied to an abraded skin, it may give much trouble, and even induce poisonous symptoms."

Carbolized Amylaceous Ointment.—Pure starch 3 parts, hot water 20 parts. Mix in the ordinary way (the starch being made first into a paste with cold water, and then hot water added) to a stiff consistence; then add olive oil 1 part, glycerine 3 parts, carbolic acid 1 part, and thoroughly mix in a mortar. When cold this is a soft jelly, which can easily be applied as an ordinary ointment. It is much more efficacious than one the basis of which is entirely fat, and it is an agreeably cool application.—*Sansom.*

PLASTERS.

A Device for Perforating Plasters.—"By the following device," says J. P. Remington, "any apothecary may porous the plaster which he has spread, irrespective of size or shape, or material upon which it is spread. The tool consists of a brass cylindrical wheel ¾-in. wide, ⅝-in. in diameter, with two circular depressions turned out of each end ¼-in. deep, leaving a hub on each end of wheel, through which a steel axle passes into the prongs of a steel handle, which is driven into an ordinary tool handle 9-in. long. The cylindrical wheel is studded with 16 punches arranged on either side half-an-inch apart alternately; these punches are of steel, tapered, and are ¼-in. long, and ⅛-in. bore at the end, making a ⅛-in. perforation. To operate, all that is necessary is to dip it first in water, then having secured the plaster firmly by tacking it to several layers of old newspapers on a rather low counter, grasp the tool tightly with both hands and drive the punches with some force through the plaster, pushing it along from the operator, the wheel revolving as it is pushed forward; the little discs of plaster collect in the punches, stick together and form a core, which falls towards the axle of the wheel and is driven out by the inclined hub. Hand-made plasters, spread on kid, may be perforated in this way by hand, and the physician may order any combination and secure one of the advantages of the machine-made plasters. The tool should be cleaned with turpentine, and kept in a box to prevent the punches from being injured."—*American Jour. of Pharm.*

On Plaster Spreading.—"It is no uncommon practice," observes L. E. Shael in the *Pharmacist*, "among physicians to order an aqueous compound and an oily substance together in the form of a plaster. Commonly this case could be managed without producing serious complications, but when the mixture is to be applied upon another plaster previously spread, then the skill of the dispenser is unduly taxed. If it is ordered to apply to the square inch of surface of a plaster of some particular kind, previously spread, an additional quantity of 5 or 10 grs. each of some solid extract, and some fixed or volatile oil, then it requires the intervention of another agency which will harmonize these extremely heterogenous elements. The solid extract must first be softened with a little water ; it will even then adhere only with difficulty to the plaster, but much more so after the addition of the oily substance, which produces a mixture that in most cases instantly separates when in a state of rest, and possesses no adhesiveness whatever. More oil, or more extract would avail nothing, neither would a more solid fatty ingredient be of much use, but the incorporation of a moderate quantity of powdered tragacanth affords the desired medium, by which the mixture can be made to assume an adhesive, compact, and uniform character, and thus be easily applied upon the plaster. Other plasters can be produced by the aid of powdered tragacanth, whereby large quantities of oil or extract can be employed when spread upon sheets with an adhesive margin. In every case the extract is first liquefied with water and a small portion of glycerine, the oily substance added, then thickened with powdered tragacanth, and finally spread upon any desirable base, with an adhesive margin."

Liquid Caoutchouc as an addition to Plasters.—This preparation was proposed by J. W. Worthington, in a paper read before the Philadelphia College of Pharmacy. Much difficulty, says the author, has been experienced by pharmacists in preparing belladonna plaster so as to retain its adhesiveness when kept ready spread for some time.

THE SOLUTION.—*Take of pure indiarubber, cut in small pieces*, 1 *oz.*, *benzine* (*from petroleum*) 1 *pint.* Macerate with occasional agitation in a suitable stoppered wide-mouthed bottle until a thick, saturated solution is obtained.

Experiments were made with officinal belladonna plaster, which resulted in the following proportions being considered most suitable :—*Belladonna plaster* (*U.S.P.*) 7 *drs.*, *liquid gum elastic* 1 *dr.*

The plaster to be melted by a water-bath, and the liquid rubber then added and stirred well until thoroughly united. The odour of the benzine disappears when the solution is added in this way. It is important to avoid an excess of heat, and hence the water-bath is recommended.

Liquid rubber will be found to act admirably in all plasters made to keep through the summer.—*Amer. Journ. of Pharm.*

Antiseptic Lead Plaster.—Olive oil (by measure) 12; litharge, finely ground, 12, beeswax 3, cryst. carbolic acid 2½ parts (all by weight). Heat half the oil over a slow fire; then add the litharge gradually, stirring continually until the mass becomes a little stiff; then add the other half of the oil, stirring as before, until it becomes thick again. Then add the wax gradually till the liquid again thickens. Remove from the fire and add the acid, stirring briskly till thoroughly mixed. Cover up close, and set aside to allow all the residual litharge to settle; then pour off the fluid, and spread upon calico to the proper thickness. The plaster made in this way can be kept rolled in stock, and if in well fitting tin canisters, will retain its virtues for any length of time.—*Lister.*

Antiseptic Adhesive Plaster.—Dip ordinary strapping in hot solution of carbolic acid, made by mixing one part of 1 to 20 lotion with two parts of boiling water. Will adhere to a moist skin, so that it may be employed under spray when advisable.—*Lister.*

Antiseptic Cere-Cloth.—Cloth or thin calico is saturated with cerate, made after the following formula, by simply drawing a portion through it while in a fluid state, or spread by a machine over cylinders containing cold water.

Strongest Cerate.—Calvert's pure fluid carbolic acid 2 ozs., olive oil (coloured with alkanet root to distinguish the cerate) 1½ ozs., yellow wax, liquefied, 1½ ozs., paraffin, liquefied, 6 ozs. Mix.

Medium Strength.—Pure carbolic acid 2 ozs., olive oil 2½ ozs., yellow wax 2½ ozs., paraffin 5 ozs. Mix.

Weakest.—Pure carbolic acid 1½ ozs., olive oil 1 oz. and 6 drs., white wax 1 oz. and 6 drs., paraffin 7 ozs. Mix.

Adhesive Plaster.—M. Eng gives the following formula in *L'Union Pharm.*:—P. gum damar 560, oil of sweet almonds 140, castor oil 70, glycerine 30, spt. of ether (equal of ether and spirit) 225 to 240 parts, aniline red q.s. The first four ingredients are to be heated in a copper vessel until the resin is fused, the aniline red then added, and when the mixture has half cooled the spirits of ether has to be poured in. An emulsive liquid is thus formed of the consistence of syrup. A layer is then spread on a material previously coated with mucilage of starch, flour, or isinglass. The court plaster so made is said to be strongly adhesive, bright, and shining, and free from any irritating effect on the skin. It does not dry up like ordinary court plaster, contains no lead, and may be spread on any material. It also allows of the introduction of any substance soluble in alcohol or ether.

Court Plaster.—A new form of adhesive plaster is described by Dr. Martin, in *Boston Med. and Surg. Jour.*, which is made by incorporating Para caoutchouc and Burgundy pitch, with a small proportion of balsam of tolu spread on a strongly woven cloth. A sticking plaster which will not cause irritation, which will adhere well, and which will "not wash off" is certainly a desideratum. The Japanese have already solved the difficulty by the very simple plan of spreading birdlime on paper, cloth, or silk, and applying it to wounds or cuts, which it is stated to heal rapidly.—*Pharm. Jour.*

QUERIES.

Qy. 1.—"**W.**," *Ph. J.*, 8/9/77.—"*Emplast. Cantharides*—When this plaster is ordered should the surface be painted with a vesicating fluid?"

Ans.—"F. S."—"It is not correct to paint the surface with a vesicating liquid unless ordered by the prescriber."

"J. B. L. Mackay."—"The manner of spreading a blister is merely a matter of taste or usage. There are various ways of leaving the surface, each of which can boast of some superiority over the others, according to the opinions of those who practise a special course; *e.g.*, some apply it to the skin smooth, others cover it with tissue paper and rub a little camphorated oil over the top. Another prevalent custom is to sprinkle pulv. cantharidis on the surface, whilst many recommend a few drops of liquor epispasticus to be poured on, and a few advocate the use of both the latter adjuncts. In my opinion the second way is the best. I prefer it because it possesses the following advantages:—1. The blister produced is clean. 2. It is less painful and more easily healed than in the case of the others. 3. The preparation is sufficiently active, even through the paper, if applied long enough. The addition of the loose powder often causes much needless irritation, owing to the minute particles of flies getting under the cuticle should the pustules break, and then the skin remains long abraded.

Qy. 2.—"**Emplastrum,**" *Ph. J.*, 16/2/78.—"*Plaster Spreading.* — In spreading a belladonna plaster on leather, is it usual to make an adhesive margin?"

Ans.—"The Month."—"It is not usual, neither is it deemed necessary to make an adhesive margin to the belladonna plaster prepared in accordance with the B.P. directions. This view can only be adopted when no instructions are given in the prescription, but it frequently happens that the writer indicates his wish that there should be an adhesive margin. In that case the dispenser has no option; he must follow his instructions.

Qy. 3.—"**M. D. J.,**" *Ph. J.*, 24/7/78.—"How to dispense the following:—*Empl. potassii iodidi, empl. belladonnæ p. æ.; ft. empl.* 5 *by* 3, as I cannot find a formula for emp. pot. iodid?"

Ans.—"H. Brown."—"Rodenburg's formula is:—Iodine ½ dr. (or 1 dr. iodide of potassium), rubbed up with a few drops of spirit and olive oil, and then mixed with 1 oz. of simple plaster, previously melted. The emplastrum iodinii comp. is thus made:—Iodine 2 drs., iodide of potassium 3 drs., lead plaster 1 lb., opium plaster 6 ozs. Melt the plaster, then add the iodine and iodide of potassium reduced to a very fine powder. In the above I should use Rodenburg's formula, and add iodide of potassium 1 dr. to the simple plaster, as described, and then add the empl. belladonna sec. art."

MISCELLANEOUS QUERIES.

Qy. 1.—CHLORIC ÆTHER.—"**T. N. Leigh**," *Ph. J.*, 30/6/77.—"When *spt. æther chlor.* is ordered, should *spt. chloroform or æther chlor.* be dispensed?"

Ans.—"There is some ambiguity in the actual strength of chloric ether. 'J. B. L. MACKAY' states it to be 1 of chloroform to 7 spt. vin. rect. 'E. M.' that chloric ether of strengths varying from 1 of chloroform to 6, 7, 8 and 9 of spirit were in use; and the writer of 'THE MONTH' says 1 in 10, and observes that the spirit of chloroform was introduced into the B.P. with the view of supplying an official solution of chloroform miscible with water, and superseding the non-official but very generally used chloric ether (1 in 10). At the present time most dispensing establishments use the official spirit of chloroform when either chloric ether or spirit of chloric ether is ordered in a prescription. A difficulty will sometimes occur in determining whether the prescription was written before the introduction of the B.P. If this be evident, clearly chloric ether (1 in 10) should be used, but if written subsequently to the issue of the B.P., the official spirit of chloroform takes its place. In retail it is now the practice to send out chloric æther when this article is asked for. Uniformity with regard to the use of spirit of chloroform when either æther chlor. or spt. æther chlor. is ordered in a mixture is most desirable, and dispensers should take every opportunity of bringing the subject under the notice of medical men, with the view of educating them to the uniform employment of the official spirit of chloroform of the B.P."

Qy. 2.—EXT. TARAX. LIQUID.—"**S. T. W.**," *Ph. J.*, 21/7/77.—"When *ext. tarax. liq.* is prescribed, what preparation should be used?—the old-fashioned treacly preparation, made by dissolving *ext. tarax.* in water and adding a little spt.; the more elegant liq. tarax. prepared *in vacuo*; or the succus tarax. B.P.?"

Ans.—"THE MONTH."—"This is one of those discretional preparations, in the use of which the dispenser is guided by what has been his experience, there being no pharmacopœial authority on the matter, but the introduction of succus taraxaci in the *Pharmacopœia* was probably to supply a reliable preparation of a very unreliable remedial agent."

"J. B. Barnes" observes—"The rule in practice in one of the largest dispensing establishments was to use a liquefied extract. The extract of taraxacum of the present *Pharmacopœia* does not resemble the old-fashioned treacly preparation met with formerly, and obtained by boiling the crushed root and evaporating the decoction, but is the clarified juice of the roots evaporated, and possessing the characteristic odour and flavour of taraxacum in a vastly more concentrated state."

Qy. 3.—Ferri Cit.—"**Burton**," *Ph. J.*, 20/10/77.—"When *ferri cit.* is ordered, should *ferri ammon. cit.* be used?"

Ans.—"The Month."—"Ferri ammon. cit. should be used. Ferri ammon. cit. is a recognised preparation, and is not unfrequently written ferri cit."

"Verb. Sap." says—"Ferri ammon. cit. should be used unless the mixture contains a mineral acid, when ferri cit. is correct."

Qy. 4.—"**Uniformity**," *Ph. J.*, 23/2/78.—"What is a drop? The following prescription will place the question before our readers:—*Aq. laurocerasi* 2 *dr.*, *vini ipecac.* 1 *dr.*, *chlorodyne* 2 *drs.*, *acid hydrocyanic dil.* 20 *gtt.*, *aq. ad.* 8 *ozs.* *Ft. mist.* *Cap. cochl. ampl. j. urgente tussi.*"

In the above are drops or minims of the prussic acid to be dispensed? Certain published statements say that 20 drops of this acid are equal to about 27 minims. It would also be desirable to know what chlorodyne is to be used. The author of *The Companion to the B.P.* gives a formula—Liq. chloroformi comp. (page 93, ninth edition), which has been represented to him as the composition of the popular medicine called chlorodyne. Might this be used?"

Ans.—"The Month."—"What is a drop? 'A small portion of any fluid in a spherical form, which falls at once from any body.' From a very early period 'gtt.' has occupied a place in prescriptions, but although the minim as a measure of capacity was introduced into the *Pharmacopœia* in the early part of the present century, as the smallest liquid measure, still the introduction of the minim does not supersede its more ancient rival, the drop. The real question at issue is not, Which is the more accurate, dropping, or measuring? but when 'gtt.' occurs in a prescription should the ingredient be dropped from the bottle, or measured by the minim measure? It will no doubt be urged that drops vary so much, depending on the density of the liquid, the shape of the lip, the quantity of fluid in the bottle, and also whether the stopper be kept partly in the bottle whilst dropping or be entirely removed, that for accuracy and even in some instances safety the minim measure should in every case be used. But this is begging the question, and may be met by the remark that there is no evidence to show that the writer of the prescription is not as well aware of the difference between a drop and a minim as those are who have taken the trouble to publish tables showing these differences, and that he prescribes his drops accordingly. Guttæ cannot be rendered minims any more than minims can be rendered guttæ; at the same time it must be admitted as most desirable that writers of prescriptions should discontinue the use of the term 'guttæ,' uncertain and unsafe as it is proved to be, and substitute for it the more definite 'minim;' but the change, however much to be wished, must be initiated by the writer of the prescription and not by the dispenser. Observations in the *Pharmacist* of 1874 on this subject are very much to the point—'The remedy for this evil rests not with the pharmacist but with the physician, whose duty it is, and whose interest it will soon be, to protect him from it.' So long, therefore, as the medical profession in their prescriptions make use of the term 'gtt.,' so long should a dispenser drop that fluid, of which it stands as the symbol of quantity, or an equivalent of that ingredient, determined by previous experiment, by measure, and the responsibility must rest on the writer of the prescription. In 1842 Mr. Allsop introduced a minim meter, and at the same time remarked on the variable character of drops as compared with minims. Mr. Barnard Proctor shortly afterwards followed in an article commencing with the question, 'What is meant by 'gtt.''? and accompanied it by a table giving the results of many experiments to show the difference between drops and minims. He also suggested the more general use of the minim measure, but he left the real point at issue just where he found it."

With regard to the chlorodyne in question, the writer of "THE MONTH," continues:—"In the present advanced state of medical knowledge and the present position of medical science, it is an anomaly to find 'nostrums' of unknown composition take the place of those remedial agents of known and definite composition of which the *Pharmacopœia* is the depository; but whilst such is the case that preparation generally accepted as the original should be used; in no case can a formula, 'represented as the composition of the popular medicine,' be accepted by the dispenser of the prescription. Report is no authority."

Qy. 5.—"**Spes**," *Ph. J.*, 23/3/78.—"The formula for *nervine balsam?*"

Ans.—"AN ASSOCIATE" sends the following formula for nervine balsam:—Oil of mace 4 ozs., beef marrow 4 ozs. Melt and add oil of rosemary 2 drs., oil of cloves 1 dr., balsam of tolu 2 drs., camphor 1 dr. Dissolve in spt. rectif. 4 drs."

"M. S. A." gives the same formula with the omission of the oil of rosemary.

Qy. 6.—"**A. H. Cleland**," *Ph. J.*, 23/3/78.—"*Glycerine of belladonna.*—The formula required."

Ans.—"AN ASSOCIATE."—"*Glycerine of Belladonna*: Two formulas are given in Squire's *Pharmacopœia of the Hospitals*, either of which I presume may be termed 'Glycerinum Belladonnæ.' The formulas are—1st, Extract. belladonnæ 1 dr., glycerini 4 drs. This is the London Ophthalmic Hospital formula. 2nd, Extract. belladonnæ, glycerini, of each partes æquales. This is the Middlesex Hospital formula."

"H. J. PAVEY, University College Hospital."—"At University College Hospital we use a preparation of glycerine and belladonna which is made as follows:—Extract of belladonna 4 parts, to which is added 1 part of water. This being rubbed into a smooth paste an equal quantity of glycerine is added. The water is added to satisfy the hygroscopic action of the glycerine, as if no water be added it is rather troublesome to get the preparation of a smooth consistence."

"THE MONTH."—"When there is no official formula 'as in the above case,' the dispenser must, in the absence of the writer, be guided by some corresponding preparation that has *Pharmacopœia* sanction. Glycerine of belladonna may be made the same strength as ung. bellad., using glycerine instead of lard. In this instance it is perfectly possible that the glycerole of belladonna, made in accordance with any one of these hospital formulæ, may be a more active and efficient preparation, but in case of inconvenience from an undue absorption of belladonna, the dispenser of the prescription would be in a better position if he had made the glycerole of belladonna in strength corresponding to a formula having official sanction than any other, especially stronger, used in hospital practice, and probably under special circumstances."

Qy. 7.—"**S. L.**," Belfast, *Ph. J.*, 27/4/78.—"What should be dispensed as *Liq. Hoffmani?* Squire mentions spt. ætheris B.P., while Beasley and Neligan give a preparation containing *etherial oil.*"

Ans.—"G. P. KNIGHT."—"Spt. ether co. P.L."

"G. W. STEPHENS" sends the following formula for Liq. Hoffmani, according to Dorvault:—"Ether sulphurique, alcool à 90°, āā P.E. Mêlez (Codex). L'esprit d'ether sulphurique composé liqueur nervine de Baug; spt. æther comp. (Lond) est composé de: éther sulphurique 192; alcool 384; huile douce de vin 9. Il est donné comme représentant la veritable liq. d'Hoffmann. Edinb. suprime l'huile douce. *Dose*—1 à 10·0 dans un liquide approprié."

"W. H. LANGBECK" adds: "Liq. anodynus mineralis Hoffmani seu spt. ethereus, of the *Pharm. German*, is the same as spirit æther of the B.P. (sp. gr. 0·808—0·812)."

"HENRY BROWN," Northallerton, says that: "Hoffman's Anodyne is spiritus ætheris compositus, and differs from spiritus ætheris in containing ethereal oil. Squire is wrong in stating on p. 25, ed. xi. of his *Companion* that spiritus ætheris is called 'Hoffman's Anodyne Spirit.' I can find no proof for such a statement; but all authorities are against such statement, and it should be corrected. The date of Hoffman's Anodyne may be carried back into the early part of last century, and it is said he was taught its composition by an apothecary called Martmeier. In the *Ph. Lond.* for 1836, it was called compound spirit of sulphuric ether, and in that of 1851, compound spirit of ether. The Edinburgh spirit of ether, or of sulphuric ether, the same as the B.P. preparation, has never been called by the name of Hoffman's Anodyne. I observe there is considerable difference in the quantity of ethereal oil used. Hooper's *Dictionary of Medicine* gives :—' Spt. of sulph. ether one pint, ethereal oil 2 fl. drs. M. *Lond. Ph.* : æther. sulph. 8 fl. ozs., rect. spirit 16 fl. ozs., ethereal oil 3 fl. drs. M. Stille gives : Ether half a pint, alcohol a pint, and ethereal oil six fl. drs. The sp. gr. is 815.' Wood gives the same formula, and adds : 'Hoffman's Anodyne is sometimes offered for sale without the ethereal oil. Forty drops of the genuine preparation will render a pint of water distinctly milky ; but if no oil of wine be present, milkiness will not occur.' Hoffman's Anodyne seems to have a more persistent effect upon the system than ether or spirit of ether ; but the true mode of action of ethereal oil is still unknown. Hoffman's Anodyne is very useful in hysteria and other nervous affections, and the apothecary is not justified in following Squire's authority and substituting spirit of ether for spt. æth. comp.

"J. M. HUCKLEBRIDGE," Pimlico, writes : "For *old* names and *old* forms, one should go back to *old* books. Dr. Anthony Todd Thomson (the first lecturer to the Society on Materia Medica), in his *London Dispensatory* of 1837, in speaking of spt. æth. sulph. *comp.*, P.L., says : 'This is intended as a substitute for the Anodyne Liquor of Hoffman,' and gives as its Italian synonym 'Anodino Minerale dell' Hoffman ; ' and Professor Redwood (the first lecturer to the Society on Practical Pharmacy), in his *Gray's Supplement*, 1847, gives as Hoffman's Anodyne Liquor the spt. æth. sulph. *comp.* of the *Lond. Phar.*, 1836. With these authorities before us, I cannot think Mr. Squire justified in applying the name to the simple spt. ætheris."

The writer of "THE MONTH" says : "Liq. Hoffmani, or

Hoffman's Anodyne Spirit is a *compound* spirit of ether containing ethereal oil, or oil of wine as it is sometimes called, and when ordered that alone should be used. However much it may be desired that the spt. ether B.P. should supersede the comp. spirit, so long as the preparation differs in composition this cannot be done by the dispenser. It is clear, therefore, that the spt. ether sulph. co. was called Hoffman's Anodyne, and it is equally clear that from the absence of the etherial oil from the B.P. formula that the spt. of ether is neither spt. æther co. nor Hoffman's Anodyne, and cannot correctly be dispensed when either of these are ordered."

Qy. 8.—"**N. K.**," *Ph. J.*, 27/4/78.—"What is *palma christi?* A doctor sent for a bottle for his nurse, and we sent castor oil as ordered in *Gray's Supplement*, and he returned it."

Ans.—"W. H. LANGBECK" says: "Oleum palmæ christi is identical with oleum ricini. *Vide* Flückiger and Hanbury's *Pharmacographia*' page 510."

"HY. BROWN" says: "N. K. was quite right in sending castor oil. The doctor must be excused for his want of knowledge, and might be referred to Balfour's *Class Book of Botany*, *Pereira* and above all to Dr. Cauvane's *Dissertation on the Oleum Palmæ Christi*, 2nd edition, 1769." *

"AN ASSOCIATE."—"Greenish's fluid extract of palma christi was intended. Have often sent out this preparation and found it correct. The patient probably had a deficiency of milk, and 'palma christi' is strongly recommended for promoting an abundant flow of milk. Also *vide Squire*, which states: 'The decoction of the leaves of ricinus applied to the breasts is said to produce an abundant supply of milk.'"

"THE MONTH."—"The name palma christi applies to a preparation made from the leaves of the castor oil plant, and used as a lactogogue. The leaves are very extensively used for this purpose in India. Dr. McWilliam brought the medicinal effects of the plant under the notice of the profession in 1850, which has since been corroborated by Dr. Tyler Smith and Dr. Routh. From the replies it appears evident that the reference is to a proprietary preparation."

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* It will be observed that Mr. Langbeck is correct in what he writes though wrong in applying it as an answer to "N. K.'s" query, and the "excuse for want of knowledge" in Mr. Brown's answer is inapplicable to the doctor.

Qy 9.—"**A. S. R.**," *Ph. J.*, 4/5/78.—"A formula for the following prescription:—*Ol. hydrarg. et morph.* ½ *oz.* Ten per cent."

Ans.—"Henry Brown, L.R.C.P., &c."—"It is prepared of various strengths after the formulæ of Mr. John Marshall, F.R.C.S., and was prominently brought before the notice of the medical profession in a lecture delivered by Mr. Marshall on the 16th of March, 1872, and reported in the *Lancet* of the 25th of May following. In the said lecture a full history is given, but, perhaps, A. S. R. may not have easy reference to the above-named source. Mercury is dissolved in nitric acid, and caustic potash or soda added, and the yellow impalpable oxide well dried. It is found that the precipitated oxide readily dissolves in oleic acid at a temperature of 300° F. A 5 per cent. solution is clear and fluid as olive oil, a 10 per cent. is as clear but dark as linseed oil, and a 20 per cent. unctuous, and not unlike resin ointment. To each drachm one grain of the muriate, acetate, or meconate of morphia is added, and constitutes the ol. hydrarg. et morph. It will be observed the 10 per cent. applies to the oxide of mercury, not to the morphia. The oleate is applied instead of the old ungt. hydrarg. by means of a brush to inflamed joints, &c., or the stronger preparations are smeared over the affected parts by the finger. Strong preparations require caution."

Qy. 10.—"**G. F. W.**," *Ph. J.*, 27/4/78.—"When *sodæ carb.* is ordered, should *sodæ bicarb.* ($NaHCO_3$) be used? If the physician meant (Na_2CO_3) *sodæ subcarb.*, would he not put *sub.* before the *carb.*?"

Ans.—"G. J. Knight."—"Soda bicarb. would be intended."

"W. H. Langbeck" says "it would be wrong in dispensing sodæ bicarb. if sodæ carb. is prescribed."

"Hy. Brown" remarks: "Is not of opinion that sodæ carb. in a prescription should be looked upon as bicarb., unless specially pointed out. Were I ordering a mixture for dyspepsia, I should not think of the subcarb.; but have known many physicians very particular about the sodas ordered, and a great deal must depend on the other ingredients. Suppose a pill of ext. aloes, aqua and soda carb. ordered, it would not be the bicarb. Have compounded such pills with sodæ carb. siccat. But they will not keep. In expectorant mixtures the subcarbonate was always meant by the physician so subscribing. The sub. is often omitted. Many physicians prefer the subcarbonate of soda to any other form in catarrh. In the case of children, the subcarbonate is most usefully combined with vin. ipecac. and other expectorants. I think the rule should be to dispense a prescription in which sodæ carb. was an ingredient, as if it was written subcarb., unless the dispenser was acquainted with the mind of the physician, and knew his mode of ordering to the contrary. In the case of powders I would most assuredly give sodæ carb. sicc. ; but if they were for use as an effervescent, then the bicarbonate should be used. Sodæ carb. is often ordered with ginger, calumba, and rhubarb in powder, and in this case the dried sodæ carb. should be used. With the equivalent proportions between sodæ carb. and sod. carb. siccat., we have nothing to do at present."

"THE MONTH," *Ph. J.*, 25/5/78.—"Unless it contained some indication to the contrary, soda bicarb. should certainly be dispensed. The carbonate, formerly subcarb., is only occasionally and in very exceptional cases prescribed, and then usually as subcarb. It would be an anomaly to dispense sodæ carb. in prescriptions, whilst at the same time the B.P. directs the preparation of sodæ bicarb. only for internal administration. When, therefore, sodæ carb. is ordered in a prescription, soda bicarb. should be used, and carb. only when specially directed."

Qy. 11.—TINCT. CARDAMOMI.—"**J. W. Barnes**," *Ph. J.*, 15/6/78.—"When *tinct. cardamoni* is ordered, which is correct, to give *tinct. card. simp.* or *tinct. card. co.* (not knowing the doctor's intention) ?"

Ans—"TENENS," *Ph. J.*—"If J. W. Barnes had tinct. cardomomi ordered in a prescription he would be justified in using the official preparation. Generally when the prescriber means the non-official preparation he writes tinct. cardam. *simp.*"

"THE MONTH," *Ph. J.*, 29/6/78.—"Ten years having now elapsed since the B.P. 1867 was issued omitting the simple tincture, there is fair presumption that when tinct. cardam. is written that the compound tincture is intended; at the same time it would be more satisfactory to determine the point definitely by reference to the writer, a procedure which would remind him to add the 'co.' in future prescriptions if he intends the compound tincture to be used. It will be a red-letter day for pharmacy when simple and compound tinctures of the same drug, with little save colour to distinguish one from the other, cease to exist, and when the preparations allowed to remain are invigorated by an occasional judicious pruning."

Qy. 12.—PULV. SCAMMONY.—"**Borgue**," *Ph. J.*, 22/6/78.—"When *pulv. scammony* is ordered, what should be dispensed—*pulv. radicis scammon.* or *pulv. gum. scammon.?*"

Ans.—"THE MONTH."—"Referring the inquirer to his *Pharmacopœia* he will there find that scammony is a gum-resin obtained by incision from the living root of *Convolvulus Scammonia*, chiefly from Smyrna and Asia Minor. The juice collected in shells is suffered to concrete; this is scammony, and it only requires to be reduced to powder to form what, by-the-bye, should be written for the sake of consistency either pulv. scammonii or powdered scammony. The rad. scammoniæ is only employed for the production of resin. scammon. Scammony enters into four preparations of the B.P., whilst the resin has a place in two and in one in the appendix. The scammony root is official in the B.P., but only for the preparation of the resin."

Qy. 13.—LIQ. CINCHONÆ.—"**Cinchona**," *Ph. J.*, 24/7/78.—"When *liq. cinchonæ* is ordered, what preparation is usually dispensed and intended—*Ext. cinch. flav.*, *P.B.*, or *ext. cinch. cord.*, or *Battley's*?"

Ans.—"HY. BROWN."—Where liquor cinchonæ is ordered without the name (Battley), or not otherwise specified, the extractum cinchonæ liquidum of the B.P., made from yellow bark, should be used. One part equal to 4 of bark."

Qy. 14.—"**B. P. Burn**, Durham," *Ph. J.*, 27/4/78.—"When *syr. ferri superphosphate co.* is ordered, would *syr. ferri phosphi co.*, *Parrish's Food*, be meant? Would anyone give me the composition of *superphosphate?*"

Ans.—"G. J. KNIGHT."—"Parrish's, unquestionably, although some wholesale houses put Easton's in their lists under that name."

"THE MONTH."—"At an evening meeting of the Pharmaceutical Society, May 1, 1857, Mr. Greenish read a paper on phosphate of iron dissolved in metaphosphoric acid. The salt formed was, after cooling, deliquescent, of a slaty colour, soluble in water, and free from any inky taste. A syrup was made by dissolving 5 grs. in the drachm of simple syrup. The term superphosphate of iron was introduced into medicine for the first time with this preparation. Subsequently an additional syrup was made by adding phosphate of lime to the former one, which was called syrup of superphosphate of iron and lime. In the B.P., 1867, there was introduced a formula for a syr. ferri phosph., but to this the name of superphosphate has not been given. The name syr. ferri superphos. would, therefore, apply to that described by Mr. Greenish, and the addition of "co.," which has no place in the original, would not render it Parrish's Food, and certainly not Easton's Syrup; neither could the "co." override the "superphosph." If there is no syr. ferri superphosph. co. by that or any other maker, the syr. ferri superphosph. should be used."

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Qy. 15.—RAISINS, B.P.—"**P. B.**, Belfast," *Ph. J.*, 8/6/78.—"With what kind of raisins is it correct to prepare the *tinctures of senna and cardamoms?* The *Pharmacopœia* directs 'raisins freed from their seeds,' and 'the ripe fruit of *Vinis vinifera* imported from Spain.' In some establishments muscatels are used, in others sultanas. The muscatels are the finest raisins imported and have seeds; the sultanas are without seeds, but I am under the impression that they never had any, consequently if this be so it would hardly be correct to describe them as 'freed from their seeds;' both are the fruit of *Vinis vinifera*, and imported from Spain. I am in favour of using muscatels."

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Ans. — "The Month." — "Either the Muscatel or Valencia may be used, but the Valencia are generally employed. As raisins have no medicinal properties, and are only required for the saccharine matter they contain, it may be questioned if the Elemi raisins from Smyrna are not the best suited for pharmacy. It is not correct to say that sultanas have no seeds, but, as compared with other raisins, they are very small."

Qy. 16.—"**H. Goodwin,**" *Ph. J.*, 8/6/78.—"What is the dose of *ol. santal. flav.*, and should it be mixed with *liq. potassæ or mucilage?*

Ans.—"J. F. Roger, Stockport."—"In a pamphlet issued by Messrs. Clarke, Bleasdale, Bell and Tollington, of York, entitled *Notes on New Remedies*, two formulæ are given for exhibiting ol. santal. flav. They are extracted from the *Medical Mirror* of 1866, Dr. H. S. Purdon:—Ol. santal. flav., 3 dr.; ess. cinnamomi, 1 dr.; spt. rectif., ad., 2 oz.: dose, one teaspoonful three times a day in wineglassful of water after food. Ol. santal. flav., 1 oz.; ol. sabinæ, 1 dr.; ol. cubebæ, 4 dr.; ol. copaibæ, 1 oz.; ess. cinnamomi, 1 dr.: dose, as above."

"Henry Brown."—"In reply to Mr. Goodwin's question as to the dose of ol. santal. flav., it may be given in from 15 m. to 30 m. on sugar, or made into a mixture, using a little mucilage and syrup with some flavouring agent, such as tinct. card. co. Liquor. potassæ may be added, but it is not essential, unless indicated by the state of the bladder and urine. The oil has succeeded in some cases of gonorrhœa after cubebs and copaiba have completely failed. He might consult, with benefit, Dr. Henderson's paper in the *Glasgow Medical Journal* for April, 1865."

"The Month."—"In whatever dose the ol. santal. flav. is prescribed it is not for the dispenser to use liq. potassæ to form an emulsion. The suggestion of liq. potassæ intrudes a medical opinion which the pharmacist is not competent to give. He may use mucilage and syrup for the suspension of the oil and suggest liq. potassæ to the writer of the prescription."

Qy. 17. — Liquor Secalis Ammon. — "**Sub. Umbra Floresco,**" *Ph. J.*, 31/8/78.—"When this preparation is prescribed what should be dispensed? I give *ext. ergotæ liquid* 3 *parts, spirit. ammon. aromat.* 1 *part*; *m.* Is there any recognized formula for it?"

Ans.—"G.J.K."—"Liq. secal. ammon. is a speciality supplied by several manufacturing chemists, including Mr. Henry Ayscough Thompson, of London, and Messrs. Richardson, of Leicester, &c. It was first introduced by Mr. Colchester, and is recommended by Dr. Waller in his book on *Midwifery;* 1 dr. contains the virtues of ½ dr. of the powder."

"SUB UMBRA FLORESCO."—LIQUOR SECALIS AMMON.—"A few weeks ago I asked for a formula for preparing this liquor. Numerous replies have been sent to the *Journal* stating the names and addresses of six different makers, but no one has been able to venture a process for its manufacture. Now, as this preparation is a most valuable therapeutic agent to the obstetric practitioner, safe and reliable in its action, combining all the virtues of the fresh ergot and the antispasmodic properties of the sal volatile, why should it not possess a recognized formula known to every dispensing chemist, in the same manner as the recipes for the production of liquor Hoffmani, Parrish's and Easton's syrups, and many other specialities are known all over the kingdom, and which preparations would never have gained the reputation they at present enjoy had their manufacture been exclusively confined to one or two wholesale houses. I would therefore suggest that a tinct. ergotæ ammon., prepared as directed in the B.P. process for tinct. valerian. ammon., would be a convenient form. I have already mentioned extract. ergotæ liquid., three parts, spt. ammon. aromat., one part; each fluid drachm would thus equal forty-five grains of fresh ergot and fifteen minims of sal volatile, but the former mode would, I should think, yield a more suitable and satisfactory preparation."

Qy. 18.—OL. MORRHUÆ C. ÆTHERIS SULPH. — "**Sub. Umbra Floresco,**" *Ph. J.*, 14/9/78.—"Had occasion to dispense this. The prescription was for 6 ozs. (tablespoonful dose), and I gave *ætheris sulph.* ½ *oz.*, *ol. morrhuæ ad* 6 *ozs.* Is there any recognized formula for this preparation?"

Ans.—" F. J. KILNER, Bristol Royal Infirmary," " gives æther sulph. 20 m., ol. morrhuæ 1 dr."

" HY. BROWN."—" Ether may be given with cod liver oil in all proportions. Twenty drops with a tablespoonful of oil three times a day is a good dose, and one which a majority of stomachs will soon sicken at. Five or 10 drops of ether is sufficient at each dose. This should, however, be settled by the medical man, not by the pharmacist."

" CHARLES SWINN, Manchester."—" Replying to query No. 18, I beg to subjoin a letter which may, to some extent, elucidate the difficulty. It was published in the *Lancet* of August 22nd, 1868, and was penned by the (I believe) original prescriber of etherized cod-liver oil, but whether such authorship will constitute it a ' recognized formula,' I am unable to decide :—' Ether and Etherized Cod-Liver Oil in the Treatment of Phthisis. Sir,—Will you allow me to reply in your columns to the many inquiries addressed to me respecting the composition of the etherized cod-liver oil ? I have three formulæ :—No. 1 consists of ten minims of pure ether (æther purus, B.P.) in two fluid drachms of cod-liver oil. Nos. [illegible] and 3 consist respectively of fifteen and twenty minims of pure ether in the same quantity of oil. The dose of the etherized oil to commence with is two fluid drachms. In some cases the ether may be given in the same or larger doses in water before meals.—Yours, &c., BALTHAZAR FOSTER.' Of course it is a matter of conjecture whether, in the prescription handed to ' Sub Umbra Floresco ' to dispense No. 1, 2 or 3 was intended, or whether Dr. Forster's preparation was intended at all, but in the absence of more distinct definition I should feel justified in adopting a medium course and dispensing No. 2 strength as meeting the requirements of the case."

Qy. 19.—ACID NITRO-HYDROCHLOR. DIL.—" **J. S.**," *Ph. J.*, 28/9/78.—" In preparing this acid the strong acids are ordered to be mixed and allowed to stand for twenty-four hours before adding the water, ' in order,' as Squire remarks, ' to develop the chlorine.' Is there no further chemical change after the water is added ? Dr. Wood, of Philadelphia, in his *Treatise on Therapeutics*, asserts that there is, and that the change goes on 'more rapidly after the water is added' than before. Is Dr. Wood right?"

Ans.—"THE MONTH."—"Dr. Wood's view, that decomposition proceeds 'more rapidly' after dilution, is unsupported. Dr. Tilden (*Pharm. Journ.*, 2nd series, vol. x., p. 588) concludes that if the compound formed by at once adding the water to the mixed acids be allowed to stand a fortnight its composition agrees with the diluted acid obtained by following the directions of the *Pharmacopœia.* Dr. Redwood suggests, for preparing this acid, the use of 'two Winchester quart bottles, putting the mixed acid into one and the water into the other, and connecting the bottles by a tube partly of glass and partly of indiarubber; the loss of gas may be almost entirely prevented and a uniform product obtained, which nearly answers to the pharmacopœial tests.' But Mr. Tilden has shown that the acids, if mixed at once with the water, yielded a similar result to that obtained by the *Pharmacopœia* method, *if it be kept exposed to the light for about a week.*

Qy. 20.—APOTHECARIES' OR AVOIRDUPOIS?—"**Difficultas,**" *Ph. J.*, 25/8/77.—"In dispensing a prescription, containing a powder of which, say, one ounce is ordered —thus: Bismuth. subnit., 1 oz.—should the avoirdupois or apothecaries' ounce be used?"

Ans.—"THE MONTH."—"In dispensing a *prescription* containing a powder thus, 1 oz., the apothecaries' ounce should certainly be used; the symbol 1 dr. presents 60 grs., and 1 oz. eight times 60, or 480 grs."

"W. WILKINSON, Manchester," says in the P.L., 1851: "We find the 1 oz. sign used to indicate one ounce of 480 grs., and that being the latest authoritative interpretation of the sign, I consider that it is still in force. If anyone—customer or physician, sent to me for a number of articles, and wrote 1 oz., 2 oz., or 4 oz., and so on, I should supply the articles by avoirdupois weight, because that would be a commercial transaction; but when 1 oz. is written in a *prescription* I conceive it is used as a multiple of 1 dr., and should be so interpreted."

The above answers to this query gave rise to a most voluminous correspondence in the *Journal.* "That burning question," says the writer of the "Month" in a subsequent number. "Civil Service stores never called forth so much controversy; woman's rights in pharmacy pale before it; and even counter practice has to hide its diminished head in presence of this great question: 'How many grains does the symbol 1 oz. represent?'"

Able arguments, equally convincing to the advocates of one side, equally erroneous to those of the other, have been adduced; and it has required the able editor of the B.P., who, scarcely confident in standing alone on such a vital question, seeks the sanction and assistance of one of the committee to set this question finally, and authoritatively, at rest. Be it observed, then, that for the future "by authority" A, when written thus, does not mean B.

The following is a copy of Prof. Redwood's letter referred to above:—

"The Meaning of Symbols used in Prescriptions.—It appears from the discussion which has been carried on through the medium of the *Journal*, that much difference of opinion exists with reference to the meaning of signs used for representing quantities in medical prescriptions. The question first raised in these pages had reference only to the symbol (℥) for the ounce apothecaries' weight, but the discussion has since taken a wider range, and other signs have been referred to by correspondents, who seem to be in doubt as to their meaning. It is to be regretted that any uncertainty should exist on this subject in the minds of those in the performance of whose duties it is of the utmost importance that they should use weights and measures with exactness. Some complication has undoubtedly been caused by changes which have been made in the weights and measures ordered for use in medicine, but I cannot think there is any substantial difficulty in understanding what the correct interpretation is of the terms or symbols referred to in this discussion. It may, perhaps, contribute to the clearing up of any still existing doubts if reference be made to the legal position of the question. By a law passed in 1824, the meaning and value of the terms used for expressing the integers of weight according to the troy, and also the avoirdupois weights, were explained and established; and by a law passed in 1835, it was enacted that after that date 'all articles sold by weight shall be sold by avoirdupois weight, except gold, silver, platina, diamonds, or other precious stones, which may be sold by troy weight; and drugs, which, when sold by retail, may be sold by apothecaries' weight.' In 1858, the Medical Act authorized the General Council of Medical Education to describe in the *British Pharmacopœia* 'the true weights and measures by which medicines are to be prepared and mixed.' We thus have, as the result of modern legislation, four systems of weights which have been legalized, two of which—namely, the troy and avoirdupois—are accurately described and defined on sound scientific principles, while the other two are made up of integers taken from the preceding, in one case with intermediate integers introduced for the purpose of making it more suitable for use in prescribing and dispensing medicines. The law indicates the purpose for which these weights may be respectively used. All other weights are illegal if used in the sale of goods in this country, and penalties are incurred by their use. With reference to measures of capacity, the case is more simple. The Acts already referred to specify only one system of measures of capacity, of which the imperial gallon is the integer. The value of this has been accurately defined with its multiples and sub-multiples, which are the only measures that can be legally used in the sale of articles in this country. A slight modification of this system has been adopted by the Medical Council in ordering the measures to be used in preparing and dispensing medicines, which consists in adding to the gallon and pint, a fluid ounce, fluid drachm, and minim. These have previously been introduced as medicine-measures, and they have become familiar from long established use. At the time of the publication of the *British Pharmacopœia*, apothecaries' weights were exclusively used in the formulæ given in the *London* and *Edinburgh Pharmacopœias*, and also in medical prescriptions throughout Great Britain. But, since 1850, the *Dublin Pharmacopœia* had adopted a different system, in which the avoirdupois ounce was divided into drachms, scruples and grains, all of which had different values from those used in England and Scotland. The reasons which induced the Medical Council to follow the example of the Dublin College of Physicians in taking the avoirdupois pound and ounce as integers of weight, and to avoid their example in dividing the ounce into parts having the same names and symbols as those of apothecaries' weights, but with entirely different values, are fully explained in the preface to the first edition of the *British Pharmacopœia.* There were strong grounds of objection to such a division of the avoirdupois ounce as the Dublin College proposed, but it is sufficient to say that the College had no legal authority for introducing such a system, and the question need not therefore be complicated by further reference to it. We have only two systems of weights specially designed for use in medicine and legally authorized: namely, the apothecaries' weight, in which the troy pound, ounce, and grain, are supplemented with the drachm and scruple, and the weights of the *British Pharmacopœia*, consisting of the avoirdupois pound and ounce with the troy grain. The integers in each of these systems have their distinctive signs or symbols which are intended for use in prescriptions, and it is important to observe that where integers of the same name have different ponderable values they are distinguished by having different symbols. Thus, for example, the symbol for the troy or apothecaries' pound is ℔, whilst the symbol for the avoirdupois pound is lb., the absence of the bar across the letters serving to distinguish the latter. The troy or apothecaries' ounce has its characteristic symbol ℥, while the avoirdupois ounce, as ordered for use in medicine, is represented by the symbol oz. The grain being the same in both systems, no difference in the symbols was required. It was obviously intended or desired, in introducing avoirdupois weights with the troy grain (for there is really no avoirdupois grain) into the *British Pharmacopœia*, and recommending them for use by medical men in prescribing, that these weights should ultimately supersede the use of the old apothecaries' weights, and thus simplify the practice of pharmacists by making one system of weights applicable for all their requirements; but it could not have been expected that practitioners would at once or for many years completely adopt the new arrangement, and hence the necessity that each weight should have its distinctive sign. The sanction given by the Medical Council in the last edition of the *Pharmacopœia* to the use in prescriptions of the symbols ℈

and ʒ in place of writing gr. 20 or gr. 60, was intended, as there stated, for the purpose of promoting convenience and accuracy in prescribing and dispensing. How this sanction could be construed into an authority to use or interpret the symbol ℥ as having any other meaning than that of troy or apothecaries' ounce of 480 grains, I am at a loss to understand. The only excuse I know of for opinions which have been expressed to that effect is, that physicians sometimes use the symbols referred to in a way in which they were not intended to be used. This is a part of the subject, however, which I do not purpose discussing, my object being to endeavour to explain the strict meaning of the terms of symbols used for indicating quantities in medical prescriptions, in reference to which I may add that I have consulted one of the members of the Pharmacopœia Committee of the Medical Council, who entirely approves of the views herein expressed.—T. Redwood, 17, Bloomsbury Square."

Note.—It will be obvious that the professor's definition cannot apply to formulæ not printed in the usual characteristic symbols, as in the case of this work, and many others, where ounce is in every instance replaced by the ordinary "oz.," which, when not otherwise expressed, means the troy or apothecaries' ounce of 480 grains.

Qy. 21.—"**A Country Dispenser**," *Ph. J.*, 29/9/77.—"*Tinct. chinæ nit.* Formula required."

Ans.—"J. Whitfield."—"This is a common homœopathic preparation, prescribed by Dr. Kidd. The formula is: quiniæ disulph. 2 ozs., aqua dis. 10 ozs., acid nit. 4 drs. Mix and add spt. vin. rect. 6 ozs."

Qy. 22.—"**A Young Pharmacist**," 22/12/77.—"*Ext. ergotæ liquid:* crystals deposit after keeping. What are they?

Ans.—"A. W. Gerrard, University College Hospital."—"I have no doubt that 'Young Pharmacist,' if he examines the crystals obtained from the ergot extract, will find them to be acid phosphate of potassium, and if he refers to the *Pharmaceutical Journal* of April 10, 1875, he will observe that in a paper on liquid extract of ergot I have made reference to the formation of these crystals. I may here mention that I consider the presence of these crystals indicate the good quality of the preparation, and I have never failed to obtain them in my home-made extract."

Qy. 23.—"S. H. W.," *Ph. J.*, 12/10/78.—"When *inf. rosæ co.* is ordered in a prescription written subsequent to the introduction of the B.P., should *the old London inf. rosæ co.* be used, or *inf. rosæ acid B.P.*? Why do physicians nearly always order an extra quantity of *acid. sulph. dil.* with *inf. rosæ co.*? Do they forget that it already contains acid?"

Ans.—"THE MONTH."—"A comparison of the L.P. with the B.P. will show that the formulæ for infusions of roses differ in name, composition and proportions. A prescription, therefore, written *before* the introduction of the B.P. should be made up with the inf. rosæ co. P.L., or a difference in taste may be detected. But if written *after*, although with inf. rosæ co., the inf. rosæ acid should be used. Why physicians order an extra quantity of acid is a difficult question; dispensers may presume that the writer has good reason for so doing."

A SELECTION FROM THE NEW FORMULÆ ADOPTED BY THE PARIS PHARMACEUTICAL SOCIETY.*

Ten years having elapsed since the publication of the last edition of the *Codex*, a large number of new substances and preparation have been introduced into French therapeutics during that time, for which there were no authoritative formulæ. A commission being appointed by the Société de Pharmacie, the following formulæ were agreed upon and ordered to be printed. As these formulæ will probably be generally adopted as the standard for French prescriptions, and, moreover, as some of the substances and preparations are not included either in the B.P. or the *Addition*, their introduction here will be of interest to some readers.

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* Condensed from the *Pharmaceutical Journal.*

Carbolic Acid (*Acid phéniquée; Phénol.*)—$C_6H_6O_2$.

Carbolized Water (*Eau phéniquée à* 1 *p.* 100).—Carbolic acid 1, distil. water 99 grams.

Solution of Carbolate of Soda (*Sol. de phénate de soude, or Phenol sodique*).—Carbolic acid 70, caustic soda 30 grams; water to complete a litre.

Solution of Salicylic Acid (*Sol. d'acide salicylique à* 1 *p.* 100).—Acid 1, alcohol (95°) 33, water 66 grams. Dissolve the acid in the alcohol, add the water and filter.

Crystallized Nitrate of Aconitine (*Nit. d'Aconitine cristalisée*).—Cryst. aconit q.s., nitric acid (sp. gr. 1·422) q.s. Saturate the acid with the aconitine and evaporate. Voluminous crystals are easily obtained.

Syrup of Chlorhydrophosphate of Lime (*Sirop de chlorhydrophosphate de chaux*).—Bibasic calc. phosphate 12·5, hydrochloric acid as little as possible (about 8), distilled water 340, white sugar 630, alcoholate of lemon 10 grams. Suspend the calcium phosph. carefully in the water, add the acid in q.s. to dissolve this salt, but without excess. When the solution is complete add the sugar, coarsely powdered, and dissolve it cold, or with very gentle heat; filter, and add the alcoholate to the cooled syrup. Twenty grams of this syrup represent 0·25 gram of bibasic calcium phosphate.

Solution of ditto (*Sol. ditto ditto*).—Bibasic calc. phosph. 17, hydrochlor. acid as little as possible (about 10), distilled water 973 grams. Suspend the calc. phosph. carefully in the water, add the acid, allow the solution to go on for some minutes, and filter. Fifteen grams of this solution will represent 0·25 gram of bicalcic phosphate.

Saccharo-Calcic Liniment (*Lin. saccharo-calcaire*).—Olive oil 200, glycerate of sucrate of lime 100 grams.

Glycerate of Sucrate of Lime.—Quick lime 80, p. sugar 160, glycer. 160 grams, water to complete a litre. Mix the lime and sugar, adding in small portions 700 grams of water. After remaining in contact 24 hours, filter; add the glycerine and water to make a litre.

Syrup of Hypophosphite of Lime (*Sirop d'hypophosphite de chaux*).—Calc. hypophos. 5, simp. syrup 445, syr. of orange flower 50 grams. Make a syrup by simple solution. Contains 0·20 gram of hypophosphite in 20 grams.

Calcium Lactophosphate (*L. de chaux*).—This product ought not to be employed except in the state of solution in water or in syrup; in the pasty state its solubility varies, and it is always an indefinite compound.

Solution ditto (*Sol. de l. de chaux*).—Bibasic phosph. of lime 17, concentrated lactic acid as little as possible (about 19), distilled water 964 grams. Suspend the phosphate carefully in the water, add the acid, allow the solution to go on for some minutes, and filter. Fifteen grams represent 0·25 of *bicalcic* phosphate.

Syrup of ditto (*Sirop de l. de chaux*).—Bibasic calc. phosph. 12·5, conc. lact. acid as little as possible (about 14 grams), dist. water 335, white sugar 630, alcoholate of lemons 10 grams. Suspend the calc. phosph. carefully in distilled water, add lactic acid sufficient to dissolve the salt, but no excess. When solution is complete, add the sugar, coarsely powdered, and let it dissolve cold or with very gentle heat; filter and add the alcoholate to the cooled syrup. Twenty grams represent 0·25 of bibasic calc. phosphate.

Syrup of Calcium Acid Phosphate (*Sirop de phosphate acide de chaux*).—Bibasic calc. phosphate 12·5, phosphoric acid (sp. gr. 1·45) as little as possible (about 18), dist. water 335, white sugar 625, alcoholate of lemons 10 grams. Suspend the calc. phosph. carefully in the water, and add sufficient phosphoric acid to dissolve the salt. When dissolved, add the sugar, coarsely powdered, and let it melt in the cold or with very gentle heat; filter and add the alcoholate to the cooled syrup. Twenty grams represent 0·25 gram of bibasic calcium phosphate; or, approximately, 0·40 gram of pure acid phosphate.

Solution of ditto.—Bibasic calc. phosphate 17, phosph. acid (sp. gr. 1·45) as little as possible (about 23·5), dist. water 959·5 grams. Suspend the phosph. carefully in the water, allow the solution to go on during some minutes, and filter. Fifteen grams of this solution represent the same as above.

Syrup of Chloral Hydrate (*Sirop d'hydrate de chloral*).—Syr. of orange flowers 950, cryst. chlor. hyd. 50 grams. Dis. the cryst. in the syr. and filter. Twenty grams contain 1 gram of chlor. hyd.

Coca *Erythroxylon cocà* (*Erytroxylées*).—Only the leaves of this shrub are employed in medicine under the following forms:—

Powder (*Poudre*).—Powdered s. a. almost without residue.

Infusion (*Tisane*).—Leaves 10, boiling water 1000 grams. Infuse in a close vessel and filter.

Wine (*Vin*).—Bruised coca leaves 30, alcohol (60°) 60 grams; macerate for 24 hours and add Lunel wine 940 grams. Leave in contact 10 days, stirring frequently, and filter.

Elixir.—Bruised coca leaves 100, alcohol (60°) 600 grams. Leave in contact during ten days, express strongly, mix the liquor with 100 grams of syrup, and filter.

Extract (*Extrait*).—Coarsely powdered coca leaves 1000, alcohol (60°) 6000 grams. Introduce the powder into a displacement apparatus, and pour upon it, moderately packed, sufficient alcohol to allow it to become uniformly saturated. Close and macerate 12 hours; then run the liquor off, and afterwards pass through the remainder of the alcohol. Distil off the spirit and bring the residue to the consistence of soft extract.

Syrup.—Coca leaves 100, boiling water 1000 grams. Infuse for 24 hours, express and filter upon sugar in the proportion of 100 parts of infusion to 190 of sugar.

Calumba Wine (*Vin de Colombo*).—Lunel wine 940, alcohol 60, calumba root 30 grams. Add the wine and alcohol to the coarsely-crushed root, macerate ten days, with occasional stirring, and filter. It may also be prepared with Malaga wine, without the alcohol.

Granules of Crystallized Digitalin (*G. de digitaline crist.*)—Cryst. digit. 0·025, powd. sugar of milk 4, powd. gum arabic 0·90 grams, syrup of honey q.s. Triturate the digitalin in a porcelain mortar for some time with the sugar of milk, and make 100 silver-coated granules, each containing ¼ milligram.

Eucalyptus Globulus.—All parts of this tree, but especially the leaves, are impregnated with an aromatic volatile oil, which breaks up into two principles—eucalyptol ($C_{12}H_{18}$) and eucalyptene ($C_{12}H_{20}O$). The latter, which is the most important in the treatment of pulmonary catarrh, appears to be free from the irritant properties presented by the undecomposed volatile principle. Eucalyptol is miscible in water, and soluble in ether and alcohol. The *powder*, *infusion*, *wine*, *elixir*, and *extract*, are prepared in the same way as those preparations of coca (*see* p. 141).

Distilled Eucalyptus Water.—Dry leaves 1, and sufficient water to yield 4 parts of product.

Syrup (*Sirop d'eucalyptus*).—Infuse 50 grams of leaves in 250 of water. After three hours, strain and press; filter the product and bring it up to 250 grams; then add 100 grams of distil. eucalyptus water, and melt in it 650 grams of sugar under a covered water-bath.

Bromide of Iron ($FeBr_2$).—Iron filings 40, dist. water 216, bromine 80 grams. Introduce first the water and then the bromine into a flask, add the iron filings a little at a time. Towards the end, to complete the reaction, heat should be applied until the liquor is of a fine green colour. When the combination is complete, pour the whole, including the excess of iron, into a stoppered bottle. This normal solution cannot be preserved long without alteration; it should, therefore, be used as promptly as possible under the form of syrup, and especially of pills. One gram of pure bromide of iron is completely precipitated by 1·56 gram of silver nitrate.

Pills of Bromide of Iron (*P. de bromure de fer*).—Normal solution of bromide of iron (filtered) 15, phosphorized iron filings 0·10 grams, p. gum arabic q.s., liquorice powd. q.s. Place the solution and the iron in a porcelain capsule, and evaporate quickly until the liquor has lost two-thirds of its weight, then pour it still hot into a very dry and slightly warmed porcelain mortar, add the powders previously mixed, and in quantity sufficient to form a tolerable consistent pill mass, which divide into 100 pills and roll in lycopodium. To be kept in a dry bottle. Each pill contains 0·05 gram of bromide of iron.

Syrup of ditto (*Sirop de bromure de fer*).—Normal solution 15, syrup of gum with orange flower 985 grams. Twenty grams, or one tablespoonful, of this syrup contains 10 centigrams of the salt.

Ferrous Chloride (*Protochlorure de Fer*). — $FeCl_2$. Dilute pure hydrochl. acid with its vol. of water, add pure iron filings, heat slightly towards the end of the operation. When the evolution of hydrogen has ceased, filter and evaporate to dryness as rapidly as possible. The product is anhydrous ferrous chloride. If the liquid, suitably concentrated, be left to cool, greenish crystals, derivatives of an oblique rhomboid prism, are formed, having the formula $FeCl_2,4H_2O$.

Syrup of Ferrous Chloride (*Sirop de protochlorure de fer*).—Syrup of gum 800, syr. of orange flowers 175, orange f. water 20, dry ferrous chloride 5 grams. Dis. the ferrous chloride in the orange flower water, and add the solution to a mixture of the two syrups. Twenty grams contains 0·10 gram of salt.

Pills of ditto (*Pilules ditto*).—Dry fer. chlor. 10, powd. of marshmallow root 10 grams, mucilage q.s. F.S.A. 100 silvered pills, each containing 0·10 gram of the iron salt.

Solution of Ferrous Chlorhydrophosphate (*Sol. chlorhydrique de phosphate de protoxide de fer*).— Ferrous chlor. 5, phosphoric acid (sp. gr. 1·45) 5 grams, distil. water q.s. to make a litre. Twenty grams contain 0·10 gram of salt of iron.

Syrup ditto (*Sirop ditto*).—Ferrous chlor. 5, phosphor. acid (sp. gr. 1·45) 5, distil. water 350, powdered sugar 640 grams. Dissolve the ferrous chloride in the water, add the phosphoric acid, and melt the sugar at a gentle heat. Twenty grams contain 0·10 gram of salt of iron.

The *Syrup and Solution of Ferric Chlorhydrophosphate* may be obtained by substituting the ferric for the ferrous salt.

Solution of Pyrophosphate of Iron and Soda.— Pyrophos. of soda 25, dry ferric sulphate 5 grams; distil. water q.s. to make 1 litre. Dissolve the soda in 250 grams of water, and the ferric sulph. in 100 grams; add, while stirring, the ferric solution to the solution of pyrophosphate, and to the limpid and colourless solution add q.s. distil. water to make a litre. Contains same proportion as the above.

Syrup ditto.—Pyrophos. of soda 25, dry ferric sulphate 5, distil. water 350, sugar 620 grams. Make the solution, and dissolve the sugar in it by the aid of a water-bath. Contains 0·10 of the salt in 20 grams of syrup.

Powdered Calab. Beans.—Crush and dry the beans in a stove, then triturate in a covered mortar and pass the powder through a sieve of fine silk. The pulverization leaves scarcely any residue.

Tincture of ditto (*Teinture de feves de Calabar*).— Powdered bean 100, alcohol (80°) 500 parts. Macerate ten days, strain with pressure and filter.

Neutral Sulphate of Eserine (*Sulph. neutre d'ésérine*). —This salt is obtained by saturating directly and exactly a known quantity of eserine with dilute sulphuric acid (1 in 10); or, better still, by shaking a solution of the eserine with a titrated solution of sulphuric acid, so as not to exceed the point of saturation. The filtered solution of sulphate of eserine is evaporated rapidly to dryness by the aid of a gentle heat.

Sulphate of eserine can be crystallized in long prismatic needles combined in radiating groups, but it is very difficult. It is preferable to preserve it in the amorphous state, and in well stoppered bottles, as it is very deliquescent. It is employed, like eserine, internally, under the form of granules containing up to one milligram. It is used also for the eyes as a solution containing 2 to 5 centigrams of the salt to 10 grams of distilled water.

Solutions containing eserine, pure or combined, alter rapidly in contact with the air, becoming red; they should only be prepared as required.

Glycerate of Calabar Beans.—This is prepared by dissolving, with the aid of a gentle heat, the alcoholic extract of Calabar beans in glycerine, which should dissolve it entirely.

Glycerate of Subnitrate of Bismuth (*Glycéré de sous-nitrate de bismuth*).—Glycerate of starch 90, subnitrate of bismuth 10 grams. Mix carefully in the cold. *Glycerates of lead carbonate*, *zinc oxide*, and *calomel* are prepared in the same way.

Laudanum Glycerate (*G. Laudanisé*).—G. of starch 90, Sydenham's laudanum 10 grams. Mix. *Glycerate of lead acetate* is prepared in a similar way.

G. of Rhatany (*G. d'extrait de Ratanhia*).—G. of starch 90, ext. of rhatany 10 grams. Dissolve the extract in the smallest possible quantity of glycerine, and add the glycerate of starch.

Tar Water (*Eau de Goudron*).—Choice vegetable tar 5, pine wood sawdust 10, distil. water 1,000 grams. Divide the tar by mixing it with the sawdust; leave it in contact with the water 24 hours, stirring from time to time, and filter. Vegetable tar of good quality should be red-brown, transparent, free from resinous lumps, and derived either from Norway or the Landes Department. If common water, or water containing selenite be used the product will not keep, and contracts an odour of sulphuretted hydrogen. 1,000 grams of this water contain at least 1 gram of extract of tar.

Syrup of Tar (*Sirop de Goudron*).—C. veg. tar 15, p. wood sawdust 30, dist. water 1,000 grams, sugar q.s. Divide the tar as before, pour it upon the water heated to 140° F., agitating occasionally. At the end of two hours filter upon the sugar, and in a closed vessel, by the aid of a water-bath, make a syrup in the proportion of 100 of liquid to 190 grams of sugar.

Iodized Cotton (*Cotton Iodé*).—Mix 25 grams of fine carded cotton, thoroughly dried in a stove, with 2 grams of finely powdered iodine, so as to distribute the iodine powder as uniformly as possible throughout the cotton. Place the mixture in a litre flask, having a large mouth and a ground glass stopper. Keep the flask with the mouth open for some minutes in nearly boiling water, so as to expel a portion of the air, then close it and tie down the stopper. The flask is then submitted for two hours at least to a temperature near 212° F. The iodine vapourized condenses upon the cellulose. The flask ought not to be opened before it is quite cold, when all the iodine, about 8 per cent., will remain fixed upon the cotton. This should be kept in a well closed bottle.

Iodized Syrup of Horseradish (*Sirop de Raifort Iodé*).—Iodine 1, alcohol (90°) 11, comp. syr. of horseradish * (*Codex*) 988 grams. Dissolve the iodine in the spirit, filter, and mix the solution thoroughly with the syrup. After about 24 hours of contact at the ordinary temperature the combination will be complete, and the syrup will have recovered its original colour. In this preparation the iodine is concealed from ordinary re-agents. The syrup contains 1,000th of its weight of iodine.

Iodotannic Syrup (*Sirop Iodotannique*).—Iodine 1, alcohol (90°) 11, syr. of rhatany † (*Codex*) 988 grams. Proceed as above. If it be desired to obtain the preparation at once, it will be sufficient to heat the mixture to 86°—140° F.; the combination is quickly completed, and is indicated by the return of the original fine red colour of the syrup of rhatany. It contains 1,000th of its weight of iodine.

Syrup of Iodide of Starch (*Sirop d'iodure d'amidon*).—Soluble iodide of starch 10, dist. water 350, white sugar coarsely powdered 640 grams. Dissolve the iodide in the water and filter. Use this liquid to dissolve the sugar with gentle heat. Twenty grams of syrup contain about 2 centigrams of iodine.

Soluble Iodide of Starch is prepared by dissolving 1 part iodine in sufficient (90°) alcohol, adding 9 parts of starch, previously washed in water, acidulated with nitric acid, and air dried, and then drying the mixture in a water-bath at a moderate temperature. This product is triturated with sufficient distilled water to make a soft paste, which is heated in a flask by means of a water-bath until it becomes entirely soluble in water, which may be ascertained by removing a small quantity, and suspending it in pure water.

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* † See "Miscellaneous Formulæ.'

Lithium Bromide (*Bromure de Lithium*).—Bromine 80, iron filings q.s., dist. water 300, lithium carbonate 38 grams. Prepare iron bromide as before indicated (*see p.* 142), filter, and add lithium carbonate to the filtrate whilst still hot; heat towards the close of the operation to complete the double decomposition. The liquor ought to be feebly alkaline. Filter to separate the precipitated carbonate of iron, and wash the precipitate with q.s. of distilled water. Evaporate and run into flakes, which should afterwards be enclosed in well dried flasks. One gram of lithium bromide is entirely precipitated by 1·95 gram of silver nitrate.

Lithium Carbonate (*Carb. de Lithine*). — L_2CO_3 is prepared on a large scale from lepidolite. It is a white powder soluble in 100 parts of cold water. Treated with diluted hydrochl. acid it dissolves with effervescence, and the solution evaporated to dryness leaves a residue which, dissolved in alcohol, communicates to flame a beautiful purple colour. The chloride dissolved in water gives a precipitate with sodium phosphate.

One gram of this salt treated with sulphuric acid, then evaporated and heated to redness, should give 1·48 gram of lithium sulphate, which, re-dissolved in distilled water, is not precipitated by calcium oxalate or lime water.

Effervescing Lithium Carbonate.—Citric acid 40, sodium bicarbonate 50, lithium carbonate 10 grams. Mix the powders, and place them in a flat bottomed vessel, having a large surface; heat to about 212° F., stirring the powder continually until it takes a granular form; then by means of appropriate sieves obtain granules of suitable and uniform size, and preserve the preparation in well-closed bottles. *Effervescing Citrate of Lithium, ditto Citrate of Iron, ditto Potassio-tartrate of Iron*, &c., may be prepared in a similar way.

Lithium Citrate (*Citrate de Lithine*) — ($L_3C_6H_5O_7$, $2H_2O$).—Citric acid 186, lithium carb. 100 parts. Dissolve the acid in 10 times its weight of water, saturate while boiling with lithium carb., and evaporate with a gentle heat. Handsome elongated prismatic crystals are thus obtained, containing 2 equiv. of water. The citrate dried at 212° F. retains half a molecule of water. To obtain it anhydrous, it is necessary to raise the temperature to 271° F. It is soluble in 25 p. of cold water. One gram of this salt calcined, and the residue treated with sulphuric acid and heated to redness, should yield 0·223 gram of lithium sulphate.

Magnesium Lactate (*Lactate de Magnésie*).—Mg. $C_3H_5O_3$, $3H_2O$. Dilute lactic acid with 10 times its weight of water, and saturate while boiling with magnesium carb.; filter and leave to evaporate at a moderate temperature. Mag. lactate is white, and crystallizes in small, flat, elongated prisms. It is soluble in about 20 p. of cold water, much more soluble in boiling water, and insoluble in alcohol.

Mustard Paper (*Papier Moutarde*).—The preparation of sinapisms in leaves demands two conditions for its success:—(1) The employment of mustard deprived of all fatty matter. (2) The employment of an agglutinant liquid that contains no water, alcohol, resin, or fatty matter. The mustard powder is separated from the fatty matter it contains by washing with carbon bisulphide, or petroleum spirit. The agglutinant liquid consists of 4 to 5 per cent. of caoutchouc in a mixture of carbon bisulphide and petroleum spirit. A uniform layer of the viscous solution is spread by means of an ordinary plaster spreading machine. As the sheet covered with the varnish leaves the machine, a sieve containing mustard flour is shaken over it. The flour, retained by the viscosity of the fluid, remains fixed upon the paper after the vaporization of the volatile liquids by the heat of a stove. It is necessary to combine with a certain amount of precision the movements of the sieve and the progress of the sheet of paper. The paper is afterwards cut into leaves of the size required.

Syrup of Narceine.—Water containing 6 grams of hydrochloric acid (sp. gr. 1·16) per litre 100, narceine 1, powdered white sugar 650, water 250 grams. Dissolve the narceine with heat in the acidulated water, add the

250 grams of water and the sugar, and make a syrup by simple solution. Contains 10 centigrams of narceine per 100 grams, 2 centigrams in a tablespoonful (20 grams), and 5 milligrams in a teaspoonful (5 grams).

Syrup of Potassium Bromide.—Pot. brom. 50, dist. water 50, simple syrup 900 grams. Dissolve the pot. brom. in the water with the aid of gentle heat, and mix the simple syrup. Each tablespoonful (20 grams) contains 1 gram of the salt. By substituting the syrup of bitter orange peel for simple syrup, the *sirop de bromure de potassium à l'écorce d'oranges amères* will be produced.

Syrup of Sodium Hypophosphite.—Sod. hypophos. 5, simp. syrup 445, syr. of orange flowers 50 grams. F.S.A. A syrup by simple solution. Twenty grams contain 0·20 grams of the salt.—*Pharm. Jour.*

Syrup of Polygala.—Polygala root 50, boiling water 350, sugar 650 grams. Infuse during 6 hours, strain, press and filter, add sufficient water to make 350 grams of liquid, and dissolve the sugar in it by the aid of a covered water-bath.

Tincture of Polygala.—P. root 100, alcohol (60°) 500 grams. Bruise the polygala root, add the alcohol, macerate during ten days with occasional agitation, strain, press and filter.

Potion de Todd.—Old eau-de-vie 60, sugar syrup 40, dist. water 90, tinct. of canella 10 grams. The eau-de-vie is sometimes replaced with rum.

Wine of Quassia.—Lunel wine 1,000, quassia chips 30 grams. Macerate for ten days with occasional agitation and filter.

Alcoholic Extract of Podophyllum Peltatum.—*The Podophyllum peltatum* (leaves and stalks) is employed under the form of powder in doses of from 25 to 60 centigrams. By means of alcohol (90°) a yellowish green resinoid matter is extracted from it, to which the name "Podophyllin" has been improperly given. To obtain it in a state of purity it is precipitated with water from the alcoholic solution. The dose is from 2 to 6 centigrams, rarely more.

EXTRACTS FROM THE NON-OFFICIAL FORMULARY* OF THE DUTCH SOCIETY FOR THE ADVANCEMENT OF PHARMACY.†

The following is a translation of the title of the work from which these formulæ are selected :—"*Formulary : containing Receipts of Medicaments not occurring in the Netherlands Pharmacopœia*, 2nd edition. Edited by the Rotterdam Section of the Netherlands Society for the Advancement of Pharmacy ; seventh edition ; 8vo. The Hage, 1881."

Acetum Aromaticum.—Oil rosemary 1, juniper 1, lemon 1, thyme 2, cloves 5, tinct. cinnamon 100, aromatic tincture 50, dilut. acetic acid 1000, distil. water 200 parts. Mix and filter.

Acidum Chinovicum (Cinchona bitter) is a white, or light yellow, very bitter powder, obtained as a bye-product in quinine factories. It is a mixture of chinovic acid and of a glucoside thereof—chinovin. It is soluble in ammonia and in lime water to clear solutions, from which it is thrown down by acetic or hydrochloric acid, also in strong boiling alcohol, and on cooling forms in microscopic crystals. Chinovin may be separated from it by a mixture of equal parts of strong alcohol and water.

Acidum Metatartaricum (Metatartaric Acid).—Heat powdered tartaric acid in a porcelain capsule, on a sand bath, to 388° F., pour the molten mass, by means of a heated glass rod, in drops, upon a plate of glass, and transfer the cooled pieces at once into well-closed bottles.

Form : Transparent, yellowish pieces, of an agreeable sour taste, and very hygroscopic. When dissolved in water, it gradually reverts back to tartaric acid, especially on warming.

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* A few titles have been slightly altered to make them more adapted to our nomenclature.— [Ed. *N. R.*]

† From *New Remedies*.

Æther Cantharidatus (Blistering Ether). — Cantharides 2, ether q.s. Pack in a percolator, pour ether on top until they are penetrated, and set aside, well covered, for 24 hours; then gradually pour ether on top until three parts of product are obtained.

Ferri Albuminas (Albuminate of Iron).—Dry white of egg 10 (about equal to 40 parts of ordinary white of egg), solution of chloride of iron (sp. gr. 1·480) 24, distil. water 9·2. Dissolve the white of egg in 1000 parts of distil. water, let the solution stand 12 hours and filter; then add to it the solution of chloride of iron, diluted with 240 parts of water. Shake the mixture thoroughly, and evaporate to a syrupy consistence at a temperature not exceeding 104° F. Spread this liquid on plates of glass, and expose them to a temperature not exceeding 104° F. *Form:* Transparent, golden yellow scales, containing 3·34 per cent. of iron, and easily soluble in warm water after the addition of a little hydrochloric acid.

Solutio Acidi Arsenici (Solution of Arsenic Acid).—Arsenious acid 4, muriatic acid 1, nitric acid 9, distil. water q.s. Boil the acids together in a glass flask until a small sample of the liquid, neutralized with potash, is no longer coloured green by addition of solution of bichromate of potash. Then evaporate the liquid, in a porcelain capsule, on a water bath, until acid vapours are no longer given off, and the liquid has acquired a syrupy consistence. Finally, add distil. water to make the product weigh 80 parts. Contains 5·75 per cent. of arsenic acid.

Quiniæ Arsenias (Arsenate of Quinine).—Sol. arsenic acid 87, boiling distil. water 65, quinine 17. Boil the mixture until everything is dissolved, filter (if necessary), and pour the liquid into a flat capsule; when cool, collect the crystals and dry them between blotting paper. *Form:* White shining needles, easily soluble in dilute acid, in 130 p. of cold, 10 p. of boiling water, 188 p. of strong alcohol: and insoluble in ether. The salt contains 14·55 per cent. of arsenious acid, or 9·49 per cent. of arsenic.

Quiniæ Bisulphas (Bisulphate of Quinine).—Sulph. of quinine (di-quinine sulphate, the official salt) 3, dilute sulphuric acid (sp. gr. 1·113—1·117) 2, distil. water 12. Dissolve the quinine in the diluted acid mixed with the water, and evaporate the liquid at a temperature of 86°—104° F. to about one-half. Allow it to crystallize, collect the crystals in a funnel, let them drain, and dry them between blotting paper. From the mother liquid another crop of crystals may be obtained in the same manner, and from the last mother water the quinine may be thrown down by carbonate of soda.

Form: Colourless, columnar crystals, efflorescent on exposure to air, soluble in alcohol and in 11 p. of water.

Calcii Chinovas.—Chinovate (Kinovate) of Calcium. —Chinovic acid q.s., lime (freshly prepared) 1, distil. water 120. Mix 4 p. of acid with the lime and a little water to a uniform mixture, and add to it afterwards the rest of the water; filter, and mix the clear solution, by triturating in a mortar, with a little chinovic acid, so that a small quantity of it remains undissolved. Filter, evaporate on a water-bath to dryness, and powder the residue. Completely soluble in 30 p. of water. It is less soluble in warm water: the cold, saturated solution, when warmed, becomes thick like starch-paste.

Chinoidini Chinovas.—*Chinovate* (*Kinovate*) of Chinoidine (*Quinoidine*).—Chinovic acid 5, magnesia 1, distil. water 50, purified chinoidine q.s. Mix the chinovic acid and magnesia accurately with the distilled water, filter, and add to the filtrate a solution of purified quinoidine in dilute sulphuric acid as long as a precipitate is produced. Collect on a filter, wash and dry it at a gentle heat.

Form: A greyish-white powder, insoluble in water.

Chlorodyne. — Morph. hydrochlor. 1, ext. cannab. indica 1, ol. peppermint 0·2, ol. cherry-laurel 0·1, dilut. hydrochlor. acid 2, tinct. capsic. (1—10) 4, strong alcohol 8, spt. chloric ether 8, chloroform 48, syrup 48 parts. Mix the extract with the alcohol and tincture, and place them together with the spirit of ether and chloroform, in a flask. Then dissolve the morphine in a little water, and add this to the syrup. Shake well and add to it the acid and the oils. Mix all together and keep in a well-closed bottle, protected from the light. Shake well before using.

Spirit of chloric ether is prepared by pouring 6 p. of sulphuric acid and 24 parts of stronger alcohol upon 8 p. chloride of sodium, and 3 p. of manganic oxide in a flask, distilling off 22 p., shaking this with soda solution, and rectifying, so that 21 p. of product are obtained.

Magnesia Citras Effervescens (Eff. Citrate of Mag.)—Carbonate of mag. 25, bicarb. soda 91, citric acid in fine powder 117, sugar in fine powder 21, distil. water 1, stronger alcohol q.s. Rub the carb. of mag. and 75 p. of citric acid with the distil. water, and dry the mixture at 122°—140° F., until it is converted into a dry powder. Then add the bicarbonate of soda, sugar, and the rest (42 p.) of the citric acid previously mixed. Damp the mass with stronger alcohol, and pass the damp powder through a sieve, having meshes of 1·5 millimetres in diameter. Dry the powder at a gentle heat, and keep in well stoppered bottles.

Collodium Stypticum (Styptic Collodion, Richardson's).—Tannic acid 2, stronger alcohol 5, collodion 20, tinct. benzoin 2. Dissolve the tannic acid in the alcohol, then add the rest.

Elixir Viscerale Klinii (Klein's Stomachic Elixir.)—Ext. carduus benedictus 1, ext. erythrœa centaurium (*Herba Centaurii Minoris*) 1, ext. gentian 1, tinct. orange peel 20, Malaga 32.

Ext. Cinchonæ Liquidum (*De Vrij.*)—(Liq. Ext. of Cinchona).—Red cinchona (bark of stem of *Cinch. succirubra*, grown in Java or India, and containing at least 6 per cent. of alkaloids) in fine powder 100. Normal hydrochloric acid (volumetric standard) 38, glycerine 20, water 362. Macerate the cinchona with the acid and water for 12 hours, occasionally stirring. Whenever the foam has disappeared, add the glycerine, and transfer the whole to a percolator, the orifice of which is closed with a linen plug. When the liquid runs off clear, continue the percolation with water until there is no longer precipitation by solution of soda, and evaporate the percolate on the water-bath until it amounts to 100 parts.

Form : The extract is clear, bright yellow, and yields a clear solution with water. Ten p. of the extract mixed with a solution of 1 p. of acetate of soda or potash in 6 p. of water, yield a copious, light flesh-coloured precipitate of kinotannate of quinetum. The quantity of this precipitate, when collected on a filter, washed with a little water, and dried on the water-bath, in a tared capsule, should amount to 0·7 parts. When mixed with a large quantity of strong alcohol, the extract becomes very turbid, and deposits a viscid colourless calcium salt. If this is not the case, too much acid has been used in its preparation.

Normal Hydrochloric Acid is made by mixing 120 grams of the acid (sp. gr. 1·160) with about 750 cubic centimetres of distilled water, and trying how much normal soda solution is required to exactly neutralize 10 c.c. of this solution. From the figure obtained calculate the amount of distil. water which must be added, so that it takes exactly 10 c.c. of the acid to neutralize 10 c.c. of the alkaline solution.

Normal Hydrochloric Acid is standardized upon normal solution of soda, and this is standardized upon normal solution of oxalic acid.

Normal Oxalic Acid contains 63 grams of the pure acid in 1,000 c.c.

Normal Soda Solution contains 40 grams of pure sodic hydrate in 1,000 c.c.

Ext. Cinchonæ Spissum (*Inspissated Ext. of Cinchona—De Vrij*).—Evaporate the liquid extract of cinchona on the water-bath until the weight does not diminish any more sensibly. 100 parts of the liquid yield about 57 p. of the inspissated extract.

Form: Of the consistence of thick honey, yellowish red, and yields a clear solution with water in all proportions.

Gossypium Purificatum (Purified Cotton).—Macerate commercial cotton batting in benzin for ten minutes, press it, and dry it in the air.

G. Aërophorum (Carbonated Cotton).—Purified cotton q.s., citric acid 19, bicarb. soda 25, distil water q.s. Dissolve the acid in 250 p. of water, and saturate with the solution a suitable quantity of cotton. Also dissolve the soda in 250 p. of water, and saturate with it another lot of cotton of the same weight. Dry each lot separately, then mix the two lots, and preserve them in glass-stoppered bottles.

G. c. Acido Borico. (Borated Cotton).—P. cotton q.s., boric acid 10, water 90. Dissolve the acid in the water by heating to a temperature of about 60° C.; saturate the cotton with the solution, wring it out, dry it, pick it, and preserve in well closed bottle.

G. c. Acido Salicylico. (Salicylated Cotton).—P. cotton 100, salicylic acid 10, strong alcohol 100, glycerine 1. Dissolve the acid in the alcohol, add the glycerine, and saturate the cotton; dry it in the air, pick it, and preserve it.

G. c. Iodo. (Iodized Cotton).—Iodine 1, cotton 12. Wrap the iodine in filter paper, place this at the bottom of a wide-mouthed bottle; next introduce the cotton, and close the bottle. Let the flask stand in a moderately warm place until the cotton appears to be closed uniformly by the iodine. Preserve from the light in a cool place.

G. c. Iodoformo (Iodoformed Cotton).—Iodoform 2, ether 10, strong alcohol 20, glycerin 10, p. cotton 30. Dissolve the iodof. in the ether and spirit, add the glycerine, and saturate the cotton. Dry in the air, pick it, and preserve.

G. Hœmostaticum (Styptic Cotton).—Sol. chlor. of iron (sp. gr. 1480) 2, dist. water 12, potash-alum 1 p., p. cotton q.s. Dissolve the alum in the water, add the sol. of iron, soak cotton q.s. in the mixture. Dry it at temperature below 140° F. Pick and preserve from the air.

G. Hœmost. et Antisepticum (Styptic and Antiseptic Cotton).—Tannic acid 5, carbolic acid 4, alcohol 50, p. cotton q.s. Dissolve the acid in the spirit; soak the cotton and dry below 140° F.; pick and preserve.

Quiniæ Hydrobromas (Hydrobromate of Quinine).—Potas. bromide 11, quinine sulph. (offic.) 40, dist. water 40, alcohol (95 per cent.) 160. Mix the bromide and quinine with the water, warm on a water-bath, add the alcohol and digest for an hour. Then filter the warm solution, let the filtrate crystallize, and dry the crystals at a gentle heat.

Form: In colourless, silky, shining needles, soluble in 46 p. of water; also quite soluble in alcohol. The aqueous solution is fluorescent.

Strychnii Hydrochloras (Hydrochlorate of Strychnia).—*Form:* Shining needle-shaped crystals, slowly losing their water of crystallization when exposed to the light, and soluble in about 50 p. of water.

Ammonii Hypophosphis (Hypophosphite of Ammonia).—Calc. hypophos. 17, ammon. carb. 14, dist. water 200, water of ammon. 2. Dissolve the lime salt in 100 p. of the water, and the ammonia in the rest, and mix with the water of ammon. Filter and mix the two solutions, remove the precipitate by filtration, wash it with water, and evaporate the filtrate and washings on a water-bath, constantly stirring, to dryness.

Form: White, crystalline, very hygroscopic powder, completely soluble in water and strong alcohol.

Test: The aqueous solution should not yield a precipitate, insoluble in acetic acid, with test-solution of oxalate of ammonia, chloride of barium, or acetate of lead (abs. of calcium, sulphuric, and phosphoric acids), nor should it effervesce with acids (abs. of carbonate). This salt should be preserved in small securely-closed vials.*

Quiniæ Hypophosphis (Hypophosphite of Quinine).—Calc. hypophos. 3, quin. sulph. (offic.) 13, dist. water 60, alcohol (95 per cent.) 200. Dissolve the hypophos. in the water, and the quinine in the alcohol. Filter and mix the two solutions. Let the mixture stand for two hours, occasionally stirring, and filter. Distil off about one half of the liquid, and evaporate the remainder, on the water-bath, to the point of crystallization; collect the crystals, and dry between blotting paper at about 86° F.

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* The original says "Preserve the salt in a drying flask;" that is, in a vessel which is so arranged that no moist air can have access to the salt. For instance, pieces of quick-lime may be laid in the bottom of a large glass stoppered bottle, and the vials containing the salt placed within this bottle.

Form: In white needle-shaped crystals, united in groups, soluble in 25 p. of cold, 1·2 p. of boiling water, and in 9 p. of strong alcohol.

Test: The precipitate produced in the aqueous solution by ammonia must be completely soluble in ether. Neither chloride of barium nor acetate of lead should produce a precipitate in the aqueous solution (abs. of sulphuric and phosphoric acids).

Infusum Carnis Frigidi Paratum (Cold Prepared Beef Tea).—Beef (free from fat, and very finely chopped) 500, chloride of soda 4, distil. water q.s., dilut. hydrochloric acid (sp. gr. 1·050) 1. Macerate the beef one hour with the salt, the acid, and the water, then strain through a cloth, and wash the remaining beef (without pressing) with sufficient distil. water, so that 500 parts of product are obtained.

Amylum Iodatum (Iodized Starch).—Wheat starch 98, tinct. iodine (1 in 13) 28. Triturate the starch with the tincture, and dry by exposure to air.

Form: A dark blue powder containing about 2 per cent. of iodine.

Amylum Iodatum Soluble (Soluble Iodide of Starch).—Dextrine 95, iodine 5, alcohol 5, ether 10. Triturate the dextrine with the iodine, previously dissolved in alcohol and ether, and dry by exposure to air.

Form: A dark blue powder, soluble in water, and containing about 5 per cent. of iodine.

Arseni Iodidum (Iodide of Arsenic).—Arsenic crystal (metallic) 1, iodine 5. Rub them separately to powder and mix them intimately, then sublime the mixture in a glass retort, and collect the crystals which condense in the neck.

Form: In purple crystals, soluble in water, alcohol, and ether.

Hydrargyri Iodo-Chlorodinii (Iodo-chloride of Mercury).— [*Iodetum et Chloretum, Hydrargyricum cum*

Chloreto Hydrargyroso. Hydrargyri Biniodidum et Bichloridum cum Hydrargyri Chlorodo Miti. Biniodide and bichloride of Mercury with Calomel.] (As a substitute for Boutigny's salt).—Mercury biniodide 45, mercury bichloride 27, calomel 47. Triturate the salts together, with the aid of a little alcohol, until they are intimately mixed.

Morphiæ Iodo-Hydrargyras (Iodo-hydrargyrate of Morphia).—Morphia hydrochlor. 1, potassium iodide 2, mercury biniodide 2, alcohol 20. Dissolve the morphia and potass salt in the alcohol, then add the mercury, and apply gentle heat until all are dissolved; allow to cool, collect the separated salt on a filter, wash it with distil. water, and dry with gentle heat.

Form: A yellowish-white crystalline powder, insoluble (at 59° F.) in water, strong alcohol, ether, or chloroform; but soluble in 1000 p. of boiling water.

Lac Ferralum (Iron Milk)—(*Aqua phosphatis ferrici albi*—Milk of white phosphate of iron).—Soda phosphate 27, solution of chloride of iron (sp. gr. 1·480) 17, distil. water 1000. Dissolve the phosphate in the water, and gradually pour in the solution of iron (previously diluted with 3 or 4 volumes of water); stir well, collect the precipitate upon a linen strainer, wash it with distil. water until the washings are scarcely rendered turbid by solution of nitrate of silver, and mix the still moist precipitate with sufficient distil. water to produce a volume of 1000 parts—that is, the above quantities, in grams, are to yield 1 litre of the milk. It contains 0·25 per cent. of iron.

Lac Iodatum (Iodine Milk).—Cow's milk 30, tinct. of iodine (1 in 13) 1. Warm the milk to 86° F., and add to it, while stirring, the tincture. This preparation should only be made when wanted for use.

Bismuthi Lactas (Lactate of Bismuth).—Subnit. of bismuth 61, water of ammon. 50, lactic acid 55, distil. water q.s. Mix the bismuth in a flask with the ammonia, previously diluted with 75 p. of distil. water; let stand for an hour, pour off the supernatant liquid, and wash the residue thoroughly with distil. water. To the moist residue add the acid, and evaporate to dryness on a water-bath.

Cetraria Saccharata (Iceland Moss Sugar).—Iceland moss 100, sugar 100, water q.s. Wash the moss thoroughly with water, press it, then boil it for an hour with a sufficient quantity of water; strain the liquid off, press out the residue, allow the united liquids to become clear, and dissolve in the clear liquid the sugar; then, evaporate on a water-bath, while stirring, until the residue can be reduced to a fine powder. Preserve in a well-closed vessel.

Lichen Islandicus Saccharatus, principo amaro orbatus (Iceland moss sugar deprived of its bitter principle).—Iceland moss 100, potass carb. q.s., sugar 100, water q.s. Mix the moss with a sufficient quantity of warm water, in every 375 p. of which 1 p. of potass carb. is dissolved. Let it stand for an hour, then wash the moss several times with cold water, and proceed as above.

Mistura Anticarrhalis — *Hufeland's* (Hufeland's Catarrh Mixture).—Ext. of carduus benedictus 3, ext. dulcamara 1, fennel water 24, cherry-laurel water 3. Mix. *N.B.*—Ext. of carduus and dulcamara are prepared thus:—Pour as much boiling water upon the finely-cut plants (dry or fresh) as is required to make up a pulp, set aside for 24 hours, occasionally stirring, then express; again pour on a somewhat smaller quantity of boiling water, let stand 12 hours, and express. Evaporate the united liquids to a thick extract.

Cherry Laurel Water (*Pharm. Neerlandica*) is prepared by distilling six parts of cherry-laurel leaves with enough water to obtain, *at first*, five parts, a portion of which is to be assayed for the amount of hydrocyanic acid present, after which the remainder is to be diluted with distilled water, so that 1000 p. of the finished preparation may contain 0·839 p. of hydrocyanic acid, or so that one part of hydrocyanic acid is contained in 1·191 parts of the liquid.

Mistura Anticholerica (*Bleeker's*).—Bleeker's Mixture.—Aromatic wine of opium 2, ol. of peppermint 1, spt. of ether 4, water 750 p. Mix. *N.B.*—*Vin opii aromat.* corresponds to the *vin opii* of the U.S.P. Spt. of ether is the continental modern form of Hoffman's anodyne, prepared by mixing equal parts (by weight) of ether and alcohol (*Pharm. Neerlandica* and *Codex*), 1 of ether, and 3 of alcohol (*Pharm. Germ.*), &c.

Mistura Balsamica (*Choppart's*).—Choppart's Balsamic Mixture.—Spt. nitric ether 1, bals. copaib. 8, alcohol (stronger) 8, spearmint water 8, orange f. water 8, syr. of orange peel 8 p. Mix. The original prescribes aq. menth. crispæ, for which spearmint water is the nearest substitute.

Ol. Betulæ Rectificatum, Oleum Rusci (Rectified Oil of Birch, Oil of Birch Tar).—This is a red-brown, volatile oil, of a sp. gr. of 0·800—0·987, soluble in an equal weight of alcohol, and imparting an acid reaction to water after being shaken with it. Russia leather owes its peculiar odour to it.

Ol. Cadinum (Oil of Cade) is a brownish, or dark brown, clear, viscid oil, obtained by the dry distillation of the wood of *Juniperus Oxycedrus L.* It has a peculiar tarry odour, and an empyreumatic bitter taste; is readily inflammable, and has an acid reaction; is insoluble in water, but soluble in ether, chloroform, bisulphide of carbon, and amylic alcohol.

Quiniæ Carbolas (Carbolate of Quinine)—*Quiniæ Phenylas.*—Carbolic acid 6, quinine (alkaloid) 10, alcohol (0·820) 30 p. Dissolve the acid in the alcohol, warm the solution, and add the quinine, then filter, and evaporate the filtrate to dryness upon a water-bath.

Form: A white powder, soluble in 400 p. of water, in 80 p. of alcohol. It is rendered violet by solution of ferric chloride.

Phosphorus Pulveratus (Powdered Phosphorus).—Drop the phosphorus into a flask half filled with a solution of chloride of soda. Warm the mixture until the phosphorus melts, then shake it until the liquid becomes cold; pour off the solution of the salt, and wash the powdered phosphorus thoroughly with water. It should be preserved under water.

Pomatum Dupuytren (Dupuytren's Pomade).—Ext. of cinchona fusca (cold prepared) 12, lemon juice 6, tinct.

of cantharides 6, beef tallow (fresh) 96, ol. bergam. 1 p. Dissolve the extract in the lemon juice and tincture, and add the rest.

Sal. Carlsbadense Factitium (Artificial Carlsbad Water).—Sulphate of soda (dried and powdered) 46, bicarb. of soda (powd.) 42, chloride of soda 20, sulphate of potass 3. Mix, and keep in well-closed bottle.

Sapo Picis Liquidæ (Tar Soap).—Castile soap 24, carb. of soda (dried and powd.) 2, borate of soda (powd.) 1, tar 8, water q.s. Mix to a mass of pilular consistence and divide into squares.

Sapo Terebinthinæ Liquidus (Liquid Turpentine Soap)—*Balsamum vitæ citrinum.*—Carbonate of soda 3, Castile soap 4, oil turpentine 6, comp. spt. of mastic 6, comp. spt. of juniper 6, water 60. Heat the soda, soap, oil of turpentine, and water, for several hours, on a water-bath, filter, and add the spirit.

Comp. Spt. of Mastic (*Pharm. Neerl.*) is prepared thus:—Mastic 1, olibanum 1, myrrh 1, amber 1, strong alcohol 10, water 12 p. Distil them together until the distillate has a sp. gr. of 0·873 to 0·878.

Comp. Spt of Juniper (*Pharm. Neerl.*) — Juniper berries 3, caraway 1, fennel 1, strong alcohol 14, water 30. Distil until the distillate has a sp. gr. of 0·929 to 0·935.

Sapo Stibiatus (Antimony Soap).—Sulphide of antimony (Schlippe's salt) 1, Castile soap 3, water 3. Dissolve the antimony in the water, add the soap, and reduce the mass to a pilular consistence by a gentle heat. Whenever the mass assumes a red colour, on the water-bath, add a little solution of soda. The soap should have an ash-grey colour, and be soluble in water. It should be kept in a well-closed vessel. *N.B.*—Schlippe's salt is prepared as follows:—75 parts of carbon. soda (cryst.) are dissolved in 300 p. of water, heated to boiling, and mixed with a milk of 26 p. of lime and 100 p. of water. After half an hour's boiling, 9 p. of sublimed sulphur and 36 p. of levigated sulphide of antimony are added, and the whole boiled until the grey colour has disappeared, when the liquor is filtered and crystallized. The salt has the composition $Na_6Sb_2 S_8 18H_2O$. It is a sulphantimonate of soda.

Liquor Chloroformi c. Morphia (Solution of Chloroform with Morphine).—Morphine (alkaloid) 1, acetic acid q.s., strong alcohol 20, chloroform 80. Dissolve the morphine in just enough acetic acid at a gentle heat, then add the alcohol and chloroform, and preserve in well-stoppered bottles.

Liq. Ammon. Citratis (Sol. of Citrate of Ammonia).—Citric acid 16 p., water of ammon. q.s., distil. water q.s. Dissolve the acid in 40 p. of the water, and add enough water of ammonia to neutralize the solution (about 40 parts) ; filter and dilute with enough distil. water to make the product weigh 100 parts. It contains 20 per cent. of citrate of ammon., and should be freshly prepared when required.

Tinct. Ferri Iodidi (Tinct. of Iodide of Iron)—*Solutio iodeti ferrosi spirituosa.*—Iron in powd. 3, iodine 8, distil. water q.s., strong alcohol q.s. Mix the iron and iodine in a glass flask, with 20 p. of distil. water. When the mixture has acquired a bright green colour, filter it, wash the filter with a little strong alcohol, and add enough alcohol to the filtrate to make it weigh 100 parts. It contains 9·7 per cent. of ferrous iodide, and should be freshly prepared when wanted.

Tinct. Iodine Decolorata (Decolourized Tinct. of Iodine).—Iodine 10, hyposulphite of soda 10, spt. of ammonia 16, distil. water q.s., alcohol (stronger) 75. Digest the iodine with the soda, and 10 p. of distil. water, in a glass flask, until it is dissolved. When cold, add the spirit of ammonia, shake a few minutes, and then add the alcohol. Let it stand in a cool place until it has become colourless, then filter.

Form : A clear, colourless fluid, of a peculiar ammoniacal odour, and a sp. gr. of 0·940 to 0·945.

Liq. Phosphori Æthereus (Etherial Solution of Phosphorus).—Phosphorus powder 1, ether 200 p. Pour the ether in a flask provided with a well-fitting stopper, add the phosphorus, close well, and macerate, occasionally shaking, for three or four days, or until no more undissolved phosphorus remains. Pour the clear liquid into small vials, which must be completely filled and kept in a cool dark place (*see* Powdered Phosphorus).

Spt. Cochleariæ Comp. (Comp. Spt. of Cochlearia) —*Cerevisia antiscorbutica Sydenhami* (Sydenham's Antiscorbutic Beer).—Coch. (fresh flowering herb) 72, curled mint (dried and cut) 6, sage (dried and cut) 6, orange peel (dried and cut) 8, nutmeg (bruised) 1, alcohol (stronger) 36, water 250. Macerate for one day and distil. until the distillate has a sp. gr. of 0·960 to 0·980.

Spt. Melissæ Comp. (Comp. Spt. of Melissa).—Melissa (dried and cut) 8, lemon peel (fresh cut) 2, nutmeg (bruised) 2, coriand. (bruised) 2, cloves (do.) 1, cinnamon (do.) 1, alcohol 55, water 70. Macerate for one day and distil off 72 p. The sp. gr. should be 0·906.

Spt. Poly-Aromaticus (*Pharm. Belg.*) (Polyaromatic Spt.—Fioraventi's Balsam).—Cloves, nutmeg, cinnamon and ginger (bruised) of each 1, myrrh (in coarse powd.) 2, galbanum (do.) 2, storax 2, laurel berries 3, turpentine 4, alcohol 98, water 334. Macerate for 1 day and distil off 108 p. The sp. gr. should be 0·900.

Spt. Valerianæ Comp. (Comp. Spt. of Valerian).—Valerian (bruised) 9, lovage seed (do.) 3, pennyroyal (cut) 2, savin 1, alcohol 35, water 35. Macerate for one day and distil off 30 parts.

Spt. Vulneralius Ricordi (Ricord's Wound Spirit).—Thyme, common origanum, melissa, peppermint, marjoram, rosemary, sage, wild thyme (*Th. serpyllum*), hyssop, wormwood, rue, tansy in seed, chamomile, Roman, lavender, of each 1 ; alcohol 48 p. Macerate for one day, and distil until the distillate has a sp. gr. of 0·873.

Cupri Sulphas. in Bacilles (Sulphate of Copper in Sticks).—Heat crystallized sulphate of copper until it has become completely anhydrous, and rub the dry salt to a fine powder. Press or ram the powder into small cylindrical moulds made of filtering paper, about 8 c.m.

(3¼ inch) long, and 7 a.a. (about ¼ inch) in diameter, and after having closed them, put them for one or two days in a damp place. Finally remove the casing of filtering paper.

Syrup Ætheris (Syrup of Ether).—Ether strong 1, alcohol stronger 1, syrup 15. Mix the ether and alcohol, then add the syrup. Mix.

Syr. Ferri Bromidi (Syr. of Bromide of Iron).—Iron, in powder, 1, bromine 2, sugar 15, distil water q.s. Put the iron into a flask, pour upon it 10 p. of distil water, and add the bromine in small quantities at a time, and under constant agitation. Filter the light green liquid into a flask containing the sugar, and wash the filter with sufficient distilled water to make the contents of the flask weigh 27 parts. Finally, dissolve the sugar by agitation, and preserve it in small well-closed vials. It has a light green colour and contains 10 per cent. of ferrous bromide.

Syr. Codeinæ (Syr. of Codeine).—Codeine 1, alcohol 5, syr. 494. Dissolve the codeine in the alcohol, and add the syrup.

Syr. Depuratus (Larrey) — (Larrey's "Purifying Syrup.")—Sarsaparilla, cut and bruised, 200, guaiac. wood, rasped, 50, China root (*Smilax China*) in coarse powder 5, sassafras, rasped 5, senna 6, borage (*B. officinalis*) 6, elder juice (inspissated) 40, molasses 500, sugar 500, water q.s. Boil the sarsap., guaiac., and China root for half-an-hour with enough water so that 720 p. of liquid may be separated from the dregs. Add to this liquid the sassafras, senna, and borage; let it macerate for half an hour, and strain; then mix the strained liquid, which should amount to 700 p. with the other ingredients.

Syr. Eucalypti (Syr. of Eucalyptus). — Eucalyptus leaves 5, sugar 20, water q.s. Pour 50 p. of boiling water upon the leaves. Macerate one hour, strain and express. For every 12 p. of liquid so obtained, add 20 p. of sugar and dissolve.

Syr. Chlorali (Syr. of Chloral).—Chloral hydrate 16, distil. water 24, syr. 200, oil of curled mint 0·1 p. Dissolve the chloral in the water, add this to the syrup, and finally add the oil. [If the parts are taken in *grams*, *one drop* of the oil is sufficient. Oil of peppermint will answer equally well.]

Syr. Calcii Iodidi (Syr. of Iodide of Calcium).—Lime 5, iodine 2, sugar 200, water q.s. Triturate the lime to a fine powder with the sugar, and gradually add 100 p. of water. Let the mixture stand several hours, occasionally stirring, then filter. To the filtrate add the iodine, and when this is dissolved, 170 p. of sugar. Dissolve the latter without heat. This syrup is clear and colourless, and should be preserved in well-closed bottles.

Syr. Ipecacuanhæ Stibiatus (Antimonial Syrup of Ipecac).—Tartrate of antimony and potassa 3, tinct. of ipecac. (1—10) 100, syrup 2,000, water q.s. Dissolve the tartrate in a little water, add the solution to the tincture and syrup contained in an evaporating dish, and evaporate on a water-bath until the product weighs 2,000 parts.

Syr. Inglandis Comp. (Comp. Syr. of Butternut Leaves).— [Vanier's Antirhachitic Syrup.] —Ext. of butternut leaves 4, ext. brown (grey) cinchona 2, alcohol 4, port wine 6, syr. 180, iodide potass 1, oil sugar of anise (1 p. oil, 50 p. of sugar) 3 p. Mix the extracts with the alcohol, port wine, and ten parts of syrup. Dissolve the iodide and the oil sugar of anise in 170 p. of syrup, and mix the two liquids. [This syrup is also prescribed with cod-liver-oil 1 p. to 19 of syrup.]

Syr. Lactucarii (Syr. of Lactucarium).—Lactuc. 1, sugar q.s., water q.s. Rub the lactucarium with a little sugar and 180 p. of water, then heat to boiling and filter. In ten parts of the liquid dissolve 19 p. of sugar syr. lenitivus. Lenitive syrup: Hydrochlor. of morphine 1, cherry laurel water 100, syr. 3,839, tinct. of cochineal (1·8) 60, (4,000 p.) Dissolve the morph. in the water, and mix with the other ingredients.

Syr. Mannæ (Syr. of Manna).—[Syr. Sennæ Comp. Syr. of Senna and Manna].—Senna 24, fennel 3, manna 50, sugar 200, water q.s. Pour 100 p. of water upon the senna and fennel. Macerate half an hour, strain and pass enough water through the strainer to obtain 108 p. of liquid. In this dissolve the manna and sugar. Finally strain.

Syr. Ferri Oxidi (Syr. of Oxide of Iron).—Sol. of chloride of iron (ferric) sp. gr. 1·480—1·484 12, water of ammon. 14, sugar 85, distil water q.s. Mix the sol. of iron with 120 p. of the water. Add to it slowly, by constant stirring, the water of ammonia previously diluted with 140 p. of distil. water. Collect the precip., wash it with distil. water until it ceases to produce a cloudiness in test solution of nitrate of silver, and mix it with the sugar in a porcelain capsule. Warm the mixture for a few hours, on a water-bath, occasionally stirring, then boil it gently, with occasional addition of distil water, until one drop diluted with distil. water yields a clear, light brown solution. Then dilute the syr. with warm distil. water until it weighs 136 parts; one p. of syr. diluted with 5 p. of water should not produce a precipitate. Fifty p. of the syr. contains 1 of ferric oxide. Preserve in the dark.

Syr. Calcii Phosphatis (Syr. of Phosphate of Calcium).—Phosph. of calc. 1, phosphoric acid 3, syr. q.s. Digest the calcium in 6 p. of syr., and the acid on a water-bath, occasionally stirring until the salt is dissolved, then add 400 p. of syrup.

Syr. Rhamni Cathartici (Syr. of Buckthorn).—Juice of buckthorn berries, fermented and clarified, 8, sugar 15. Dissolve the sugar in the juice.

PHARMACEUTICAL APHORISMS, OR RECAPITULATIONS.

RECAPITULATIONS.

The following are selected from the "*Lectures on Practical Pharmacy*," by BARNARD S. PROCTOR (Churchill 1873):—

Lecture I.—RECAPITULATION ON HERBS, &C.—Herbs, &c., if kept moist, are liable to be affected by fermentation, mouldiness, and slow decay. The two former of these changes are most rapid at about 70° to 90° F., and may be considered to cease below 32° and above 212° F. Vegetables, in being dried, lose water and volatile oils. Some of their constituents may undergo oxidation, such as oils, resins, alkaloids, or acids. Starch may be rendered soluble. Albumen may be rendered insoluble. The most generally desirable heat for drying vegetables is just above the fermenting zone, say 100° F. to 120° F. The rate of evaporation increases in a high ratio with increase of heat, but is also affected by dryness of the air and speed of its motion, by the pressure of the atmosphere, and by the compactness and hygroscopic properties of the material.

Lecture 2.—RECAPITULATION ON COMMINUTION, &c.—Comminution includes cutting, bruising, and grinding; the first being used for fresh vegetables and hard woods, which are most advantageous cut transversely, the product thus obtained being less dusty than that produced by bruising. Comminution should be carried further. The more compact the material, the less it expands in the solvent in which it is to be macerated, and the more difficulty there is in dissolving the active matter. Comminution should be most perfect when an insoluble drug is to be administered in suspension. Steel mills are advantageous for tough materials, vegetables containing essential oils, &c.; stone mills for such as can be dried till they become friable, and for salts and mineral substances. Powders are likely to differ from massive drugs in having less water, essential oil, or other volatile matter, and in having less woody fibre or husk; they are more ready to yield soluble matter to solvents, and are more liable to accidental or wilful impurity. Red oxide of mercury is better ground damp. Camphor and spermaceti are most readily powdered with a little spirit.

Lectures 3 & 4.—RECAPITULATION ON SOLUTIONS.—Solution is the union of a liquid (the solvent) with another liquid, a solid or a gas, the combination being so intimate that gravity has not the power of separating the heavier from the lighter material, but not so intimate as to cause change in the colour, odour, or taste, unless chemical combination as well as solution takes place. The chlorides of silver and zinc afford us an example of the extremes of solubility and insolubility, though chemically analogous. The presence of one salt affects the solubility of another; in some cases increasing, in others decreasing it. Heat increases the solubility of most solids. Cold and pressure increase the solubility of gases. When solubility is spoken of it is understood to be in relation to water, unless otherwise indicated; solubility in water, however, is no guide to the solubility of the same body in other solvents. Bodies having analogous constitution, and little chemical affinity, are usually most disposed to form simple solutions, but no clear rule has been yet discovered by which to connect a body with its solvents. Simple solution of solids is usually accompanied by a fall in temperature; solution of gases causes a rise in temperature. When a solvent retains more of the soluble matter than it could under the then existing circumstances dissolve, it is said to be supersaturated.

Lectures 5 & 6.—RECAPITULATIONS ON CRYSTALLIZATION, &c.—Soluble salts are usually crystallised by cooling a hot saturated solution, or by evaporating the solvent; the object of the process being to obtain them free from foreign salts, and of a definite degree of hydration. Isomorphous substances are not separated by this means so readily as hetromorphous. Crystals, which are deposited slowly, and without agitation, are usually largest and most regular. Most salts crystallise in combination with water in one or several definite proportions; those which have no water of crystallisation frequently have water mechanically held, and known as water of decrepitation. Permanent and anhydrous salts may be dried by exposure to a warm dry atmosphere; others by the use of a bibulous material or a centrifugal drier. The difference between crystallisation and precipitation is one of degree rather than one of kind; deposits which are but slightly soluble, and not conspicuously crystalline, being called precipitates. Crystals are usually washed with the smallest effective quantity of cold water; precipitates more copiously with warm water.

Lecture 7. — RECAPITULATIONS ON DIFFUSION AND

DIALYSIS. — Various bodies in solution in water diffuse into pure water at very unequal rates. Those which diffuse most rapidly are called crystalloids, those which diffuse slowly are called colloids. Heat increases the rate of diffusion. Isomorphous compounds have usually about the same diffusive rate. Hydrated membranes afford little obstruction to the passage of crystalloids, but are almost impervious to colloids. These classes of bodies being separated by this means, the process is called dialysis. If a hydrated membrane has water on one side, and a solution on the other, they flow through the membrane at different rates; this flow is called osmosis. If the flow of water into the solution preponderates, it is called endosmosis; if the flow of the solution into the water preponderates, it is called exomosis.

Lecture 8.—RECAPITULATIONS ON VAPORISATION, &c.— Evaporation of vegetable juices requires to be performed promptly to avoid decomposition. They are liable to injury by too high a heat, or too long a continuance of a temperature insufficiently high; the temperature is conveniently regulated by water-bath, steam baths, &c., but is not safely regulated by a sand-bath. Constant stirring is in all cases advantageous, and most important in evaporation by means of a sand-bath or naked fire. The rate of evaporation below boiling point increases the more nearly that point is approached, the larger the surface exposed to the air, &c.; at the boiling point the rate of vaporisation depends mainly upon the intensity of the heat to which the pan is exposed, and the extent of surface exposed to it. In making decoctions the vessel should be deep, narrow, and covered, to avoid loss by evaporation. Fusible colloids become plastic a little below their melting points. Fusible crystalloids sometimes become more brittle before they melt. During fusion a certain amount of heat disappears; this is known as the latent heat of fluidity, and varies much with different bodies. Fusible colloids are required in plasters and ointments, to give them adhesive and plastic qualities.

Lecture 9.—RECAPITULATIONS ON DISTILLATION, &c.— The boiling point of a solution lies between the boiling points of its constituents: the boiling point of a mixture of fluids as about the boiling point of its most volatile ingredient. In distilling mixed fluids, the most volatile comes over most rapidly, but the less volatile comes over more rapidly than they would do at the same temperature if the more volatile was absent. A solution of liquids of different boiling points may be approximately separated into its constituents by regulating the heat of the boiler, or by using a series of condensers, the temperature of which are regulated. Sublimates are obtained massive by condensation on a surface not much cooler than the vapour. They are obtained pulverulent by condensation in a cold atmosphere.

Lecture 10.—RECAPITULATIONS ON FILTRATION, &c.—*Filtration* may be expedited by arrangements for keeping the filter constantly full, for increasing the pressure of the liquid upon the filtering medium, and for maintaining an increased temperature. Animal charcoal has the power of abstracting from solutions many materials when held by feeble solvents, and of yielding them up to solution again when subjected to more powerful solvents. The presence of phosphate of lime in the B.P. purified animal charcoal must be guarded against in some of these applications. Percolation is most suited to substances which are not of a mucilaginous character, and do not form viscid solutions with the required solvent. Woody materials may be finely powdered for percolation; substances yielding a viscid solution should be more roughly comminuted, and should be macerated in a portion of the solvent before being submitted to percolation. For roughly comminuted materials, alternate maceration and percolation is most advantageous. The successive portions of solvent added do not, under any circumstances, precisely displace the portions which preceded them.

Lecture 11.—RECAPITULATIONS ON PRACTICAL PHARMACY AND DISPENSING.—It is advantageous to make occasionally all the galenical preparations that can be well made on a small scale for the sake of practical acquaintance with them. Sifting a mixed powder, the components of which are not uniformly smooth, may cause a partial separation, and should be followed by a second mixing. The normal colour of aromatic chalk powder is a dull buff, but with the same composition it is obtained of a yellow colour by the use of moisture in the process. The friable materials of a pill mass should be powdered and mixed before adding the excipient, that uniformity may be more readily obtained. The excipient of a pill mass may be varied according to whether it be required to be immediately divided into pills, or preserved in the massive state—in the former case, a temporary plasticity and permanent solubility must be aimed at; in the latter case, it should permanently retain both qualities. Crystalloids make crumbly masses with ordinary excipients: they should be made soft and worked into pills immediately. Habits of order and of observation are most important to the dispenser. When an ambiguous word occurs in a prescription and a probable reading has suggested itself, compare it with the other parts of the prescription as regards the form of the letters, the nature of the medicines, and the suitability of the dose. When difficulties are overcome make such notes as will prevent their reoccurrence. In dispensing all fluids, except mercury, are estimated by measure, unless the contrary is indicated. No strict rule can be laid down regarding overdoses. Any dose apparently unsafe should be corrected or confirmed by the prescriber. When a contracted word is capable of two meanings, judge of the drug by its companions. Soluble ingredients in a mixture should be entirely dissolved before the mixture is sent out, provided they will remain in solution. Mixtures naturally turbid should not be filtered without instructions to that effect. Distilled waters should be habitually used in dispensing.

Lecture 12.—RECAPITULATIONS ON STANDARD SOLUTIONS, &c.—Solutions of drugs which have not any great activity are of very various strengths. Solutions of alkaloids and sundry other very potent drugs are prepared in the proportion of 4 grs. of the solid to 1 oz. of the liquor. Solution of perchloride of mercury is a conspicuous exception to this rule, its strength being $\frac{1}{2}$ gr. to 1 oz. The solution of iodine is another notable exception, its strength being 20 grs. to 1 oz. The solution of carbonate of magnesia is difficult to obtain at the standard strength, and more difficult to preserve at that strength. The solution of the caustic alkalies requires caution to avoid their contamination with the material of the utensils in which they are prepared or preserved.

Lecture 13.—RECAPITULATIONS ON INFUSIONS AND DECOCTIONS.—Infusion is preferred to boiling for the extraction of drugs which contain valuable volatile matter, or are easily injured by heat. The time required for infusions is determined by the compactness of the material, and the difficulty with which its active constituents is dissolved. Essential oils improve the keeping qualities of infusions; mucilaginous and albuminous matter detract from the same. Porous substances only require coarse comminution; hard barks should be finely divided. Decoctions are preferred of such drugs as are difficult to exhaust, and are not easily injured by heat. Concentrated decoction of aloes cannot be prepared to yield on dilution with water a fair representation of the official product. The official process for decoction of cinchona only extracts about half the alkaloids present. Astringent decoctions require care to avoid discolouration by the action of iron, &c.

Lecture 14.—RECAPITULATIONS ON EXTRACTS, &c.—The aqueous liquors, or extracts, more especially from green herbs, should be evaporated with as little loss of time as is compatible with a safe temperature; a water-bath is generally used, and the heat also regulated by the thermometer. Most vegetables lose part of their activity by drying, and most vegetable liquors lose value during evaporation. Opium is said to be an exception to this rule. Ext. of colocynth should be prepared from the pulp of the fruit only, the rind and the seeds being first separated.

Lectures 15 & 16.—RECAPITULATIONS ON SPIRITS, TINCTURES, WINES, &c.—To reduce overproof spirit to proof, add to 100 measures of it as much water as makes it measure 100 plus the number it was overproof. Spirit under proof indicates spirit of such strength as could be obtained by mixing proof spirit and water; the number under proof indicates the number of measures of water in 100 measures, the remainder being proof spirit. The aromatic spirits contain 2 per cent. of the essential oil, giving them their name; the essences contain 20 per cent.—both by measure. The general rule for the strength of tinctures is that 1 fluid oz. contains the soluble matter from 1 dr. of the drug. There are several important exceptions to this rule, notably tinctures of opium and quinine. Medicinal wines resemble tinctures, but are much less alcoholic, proof spirit tinctures containing nearly 50 per cent. of alcohol, and the wines from 12 to 18 per cent. Ipecacuanha wine is more permanent if free acid be present. Products of sublimation should be entirely volatile: some at ordinary atmospheric temperatures, others only at higher heats. Products of distillation should be free from sediment, and entirely volatile also. Hydrocyanic acid, being very liable to variation, requires systematic testing. The aromatic waters should contain nothing but water and essential oil: with the exception of laurel water, they have little activity. Spirit of nitrous ether should contain but little free acid, and should evolve a film of nitrous ether on mixing with a solution of chloride of calcium. It is not difficult to make it with these qualities, but impossible to keep it so. Its density does not indicate its strength.

Lecture 17.—RECAPITULATION ON OINTMENTS, &c.—In making ointments, the active matter should be smooth and uniformly mixed. This is usually ensured by careful grinding, or by solution. The strength of mercurial ointment should be tested—most advantageously by separating and weighing the mercury, or more readily though less accurately by taking its sp. gr. The stirring of spermaceti ointment should be continued till its temperature falls to about 70° F., to ensure plastic and smooth condition. Cantharides plaster should possess little adhesiveness, lest, in removing it after use, it tear the skin off the blistered surface. Fusion of bismuth with nitrate of potash is recommended to purify it from arsenic. Copper is more effectually removed by solution in nitric acid, precipitation with water, and fusion with charcoal.

Lecture 18.—RECAPITULATIONS ON METALLIC AND OTHER

PREPARATIONS. — Impure metallic bismuth dissolved in nitric acid and poured into water, is precipitated; most impurities which might be present remain in solution; arsenic would go down with the bismuth. Some salts having a volatile acid or base, are liable to lose a portion of the volatile constituents during evaporation, and should be rendered neutral again before being crystallised. Ferrous chloride is not readily separated from chlorides of calcium or zinc until converted into ferric chloride. Granulated sulphate of iron is more easily obtained free from persulphate than the same salt crystallised in the ordinary way, and is less liable to become oxidised by keeping. Scaling imparts a convenient form to colloid salts, but does not insure their purity; it is therefore necessary to test their purity, especially in the case of citrate of iron and quinine, which is often deficient in quinine.

NOTES ON DRUGS AND CHEMICALS.

Tartaric Acid is prepared by converting cream of tartar into tartrate of lime, and then decomposing the tartrate of lime with sulphuric acid. It is liable to be contaminated with sulphate of lime; or, if nitric acid has been used to oxidise the colour, it may be contaminated with oxalic acid.

Tannic Acid is obtained by extracting galls with ether and a little water; the principal impurities are colouring matter, and a little resin.

Sulphate of Quinine is obtained from yellow bark by extraction with water and HCl, precipitating with NaO, and dissolving the washed precipitate in hot water with the least possible quantity of sulph. acid.

Hydrochlorate of Ammon. is obtained by decomposing infusion of opium with CaCl, evaporating the liquor to small bulk, pressing the resulting crystals, precipitating with ammonia, and dissolving the washed precipitate in water and HCl.

Resin of Jalap is precipitated from a tincture of the root, the spirit being distilled off, and the residue washed with water.

Resin of Scammony is produced the same way.

Resin of Podophyllum is precipitated from the tincture by the addition of water and HCl; the latter precipitating the berberin, which would be washed away if this addition were not made.

Tinct. of Quinæ will deposit some of the quinine in cold weather, unless some excess of acid be present; about 1 m. dilute. sulph. acid to each grain of quinine, being a useful addition.—*Proctor's Practical Pharmacy.*

Liquefied Carbolic Acid :—Calvert's purest (No. 1) acid (liquefied by placing the bottle containing it in hot water) 9 parts; water 1 part. Mix well.—*Calvert.*

Solution of Carbolic Acid in Water.—To obtain uniform solution, it is better to slake the carbolic acid with four times its bulk of hot water, and then to add a sufficiency of cold water; or the carbolic acid may be first mingled with alcohol, which causes more ready solution before the addition of cold water. Water will not dissolve more than one-twentieth of its bulk of carbolic acid. F. C. Calvert says: Melt the acid by placing the bottle in hot water, and when melted add $\frac{1}{20}$th of its weight of water, it will then remain permanently fluid, and can be diluted as required.

Liquefied Carbolic Acid in Alcohol.—*Pure carbolic acid* 15 parts, alcohol 1 part. Mix well. This keeps fluid at all ordinary temperatures.—*Sansom.* For many purposes, especially for dispensing, it is convenient to keep the acid in solution, otherwise the crystals must be melted by heat each time that the acid is employed.

Preparations of Thymol.—Thymol answers well for antiseptic washes in the proportion of thymol 20 grains, glycerine 1 oz., alcohol 1 oz., distil. water 1 pint; useful in *Pityriasis* (a bran-like scaly disease of the skin), and when diluted an excellent mouth wash; 20 of glycerine, 100 p. of water. The mixture does not injure surgical instruments. Thymol glycerole consists of 1 to 100 parts starch glycerole. Thymol salve consists of from 1 to 4 parts thymol to 100 parts lard.

As a Lotion.—Add 1 of fluid acid to 30 p. of boiling water, agitate and filter. *For Dressings.*—Dissolve 1 of acid to 8 or 10 of sweet, olive or almond oil, or glycerine.

Preparation of Ergot of Rye for Medicinal Use.—The inconvenience attending the alteration to which ergot of rye is liable has induced M. Perret, a French pharmacist, to investigate the subject; and he states that he has succeeded by the following process in obtaining ergot in the state of a fine powder, almost incapable of alteration, and quite free from that ordinary liability to change *which is due to the presence of the fatty constituents.* Ergot of rye, after having been well brushed, is dried in a stove at almost 40° C. until it no longer loses weight. It is then powdered and sifted through a fine sieve; the resulting powder is again exposed for some hours to a temperature of 40° C. in a drying stove; and, lastly, dried in a water-bath until its weight remains constant. It is then allowed to cool in a dry air chamber, and when cold introduced into a percolator where it is subjected to the action of perfectly dry ether at a temperature of 68°, this operation being kept up until the ether, passing through the ergot powder, does not any longer leave a greasy residue, when a few drops of it are evaporated in a watch glass. The powder is then taken out of the percolator and pressed; the cake is broken up and passed through a sieve; gradually dried during several hours in a drying stove, heated to 35° at first, and afterwards gradually to 60° or 80°, and for a few moments to 100°. The dry powder is again passed through a sieve, and allowed to cool in a dry air chamber. After this treatment a powder is obtained which has a grey colour, and is not susceptible of alteration.—Condensed from *Pharm. Journ.*, 24/6/82.

Sclerotic Acid.—This is probably the active principle of ergot. It has a feeble acid affinity, uniting with sodium to form a stable *sclerotate.* The acid and its sodium salt have the therapeutic effect of ergot, but the salt in a less marked degree. Nikitin, who has been recently studying its effects, says that 150 grs. of the acid is a fatal dose to a man weighing 110 lbs. The ordinary hypodermic dose is 0·02 to 0·03 grm. (⅓ to ½ gr.) three times a day. Sclerotic acid seems likely to partially replace ergot as a drug. It has the advantage of remaining indefinitely without loss of strength, if only kept in a dry place, and undissolved. Its sodium salt is considered the best form for internal administration.—*N. C. Med. Journ.*

Purity of Cream of Tartar.—Is tartrate of lime an adulterant ?—"Upon referring to the B.P.," says the *Pharm. Journ.* "for information on this point, we find under the head of Potassæ Tartras Acida a description of the substance commonly known as 'cream of tartar.' It is there stated to be an acid salt obtained from the crude tartar which is deposited during the fermentation of grape juice. Proceeding on this basis for further information from other sources, we find that crude tartar, the raw material from which the *Pharmacopœia* article—'cream of tartar'—is prepared, generally, if not invariably, contains tartrate of lime; moreover, that grape juice itself contains tartrate of lime as well as tartrate of potash, and that in consequence of this association of these two tartrates in the primary source of crude tartar, as well as of 'cream of tartar,' they continue to be associated in its products, so that tartrate of lime is not, as the analyst for the county of Surrey represents, 'foreign' to cream of tartar, but a natural ingredient in it."

Chaulmoogra Oil, so far as is at present known, contains gynocardic acid, 11·7; palmitic acid, 63·0; hypogœic acid, 4·0; cocinic acid, 2·3; in combination with glyceryl as fats, and the two former in the free state as well. The figures against each represent fairly well the quantity of acid in 100 parts of oil.—J. Moss, F.I.C., &c., *Ph. J.*

"**Cantharadine** is now believed," says the *C. & D.*, "to be a solid volatile oil. The female flies yield it most adundantly—about 0·4 per cent. When pure it is insoluble in water, and in cold spirit, and, which is rather remarkable, completely so in bisulphide of carbon. It dissolves readily in glacial acetic acid, chloroform, and ether, also in the fixed alkalies, but not in ammonia. It is best obtained by exhausting the flies with chloroform, recovering most of the latter by distillation, evaporating the residue, and treating with carbon bisulphide. The cantharadin remains, and is purified by re-crystallization from chloroform."

Sulphur, at 234° F., becomes a straw yellow liquid, as thin as water; at 482° F., it thickens and becomes a brownish-red plastic mass; the thickening continues so that a tube containing it may be inverted without its contents running out, until the temperature reaches 788° F., when it becomes again fluid, and finally boils at 814° F., giving a red vapour having a density of 6·5.—Walter H. Ince, in *English Mechanic.*

Professor Graham's Sea Snake.*—We have all heard about the amusing chemical toy, "Pharoah's Serpent," both harmless and injurious from its unhealthy vapours given off in the process of burning; but few, perhaps, know that a very ingenious and singular chemical phenomena was discovered and exhibited by the late Prof. Graham, Master of the Mint, which might be termed in contradistinction to Pharoah's serpent, the "sea snake," as it is produced under water. His experiments went to show the prodigious amount to which the metal *palladium* will absorb hydrogen: an amount exceeding by some hundreds of times its own bulk. Two ribbons of palladium, attached to the two poles of a battery, were placed loosely coiled in a water bath. The current was turned on: the ribbons took in so much hydrogen that they expanded, uncoiled, and stretched themselves across the bath, as if alive. The current was reversed: the hydrogen was thrown off, and the ribbons resumed their coil. They might have been compared to a couple of writhing worms. The sight was amusing; but it exemplified the researches by which Prof. Graham has thrown light on an important question in cosmical science, and led him to the discovery of the metal to which he has given the name of

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* This name is applied to the above curious phenomena by the compiler.

"*hydrogenium.*" "What do you think," wrote the Professor to Hofmann, "of a metallic hydrogen—a white magnetic metal?" The condensation of hydrogen in palladium, and the discovery of the occlusion of hydrogen in meteoric iron, confirmed the conclusion to which spectrum analysis had previously conducted us—that the meteorites came from an atmosphere of incandescent hydrogen existing under very considerable pressure. Graham's fame, as one of England's greatest chemists, justly rests upon this important discovery.

Oleum Aloes (Essential Oil of Aloes).—This oil is a pale yellow mobile liquid, sp. gr. 0·863, and boils at from 266° to 271° C. It is to the presence of this oil that the odour of aloes is due. It exists in very small quantity in aloes, only about 2 drs. being obtained from 500 lbs. of aloes. It resembles in taste and smell oil of peppermint. The boiling point, however, of the latter is only 190° C. Although aloes has been used in medicine for upwards of 2,000 years, its volatile oil was only discovered in 1873, by T. & H. Smith, the well-known chemists of Edinburgh, who were also discoverers of aloin, the active principle of aloes. In that year they exhibited a small quantity—2 drs.—at Vienna. That specimen was afterwards presented to the Pharmaceutical Society, and unfortunately the bottle containing it was broken, and the oil lost. They, however, subsequently prepared another sample. In this specimen the oil was floating on the surface of a colourless mobile, etherial liquid, of a sp. gr. 0·95, being the liquid from which the oil of aloes was finally distilled. This oil is interesting on account of its extreme rarity, being, in all likelihood, the only specimen in the world.—*Pharm. Journ.*

Eucalyptus Oil.—The eucalyptus genus belongs to the Myrtaceous family, and is indigenous to Australia. There are over 140 species, and the ols. differ in kind, aroma, and quality; some are coarse and pungent, resembling the oil of cajuput; others possess a more agreeable but somewhat camphoraceous odour, hardly adapted for the finer purposes of perfumery: the best, perhaps, for this purpose is that distilled by J. Bosisto & Co., of Australia, under the name of "Amygdalina Odorata." The oil is well adapted for perfuming soaps, as it yields up its own identity in conjunction with the more costly ottos in consonance with it.

Eucalyptus oil is a powerful solvent of the more difficult resins: 2 lbs. of fossil Kauri gum of New Zealand will be found dissolved out of every 2½ lbs., *without the application of heat*, in 10 oz. of this oil to 1 gall. of methylated spirit. If an addition of a few ozs. of Venice turpentine, or colophony, be added, the whole of the resin will dissolve. For photographic varnish the oil will be found serviceable. In medical practice, for both external and internal purposes, it has many valuable properties. To the veterinary surgeon it is invaluable as a rubefacient—for reducing swellings, and removing stiff joints; and for sprains, galls, cuts, wounds, and broken knees, it is found to be a sterling remedy. The physiological effect of this oil internally is described as diffusive, stimulant, carminative, and antispasmodic. It is largely used in the private practice of the leading medical practitioners of the Australian Colonies. Messrs. Felton, Grimwade & Co., of Melbourne, are the wholesale agents.

Oleum Pini Pumilionis.—The oil distilled from the leaves and young branches of the *Pinus pumilio* (*Welld.*), a dwarf pine closely related to the common Scotch fir. The oil is nearly colourless, and has a most agreeable balsamic odour. It has a sp. gr. of 0·893 at 62° F. It is held in high estimation in Germany, whence it is imported.

Oleum Pini Sylvestris.—This oil is not to be confounded with ordinary oil of turpentine. It is prepared from the leaves of the *Pinus sylvestris* (*Linn.*), and is well known in Germany, whence it is imported as firwood oil. It is perfectly colourless and transparent, and has an agreeable odour of the fresh pine. It has a sp. gr. of 0·868 at 60° F. It is sold both in this country and on the continent for external use in rheumatism.

Alcoholate of Chloral.—The *Pharm. Zeitung* says that the chloral hydrate made by Roussin, of Paris, is not really a hydrate at all, but an alcoholate. It yields 61·7 per cent. of chloroform, and contains 23·7 per cent. of alcohol.

Alcoholic Solution of Sulphurous Acid.—Prof. John Gamgee says: "Cold alcohol will take up 300 times its bulk of sulphurous acid gas." "In this form, it could, with advantage, be made," says the *Brit. Med. Journ.*, "an article of commerce for medical and sanitary use. If it be desired to disinfect a box of clothing, a portion sprinkled over the floor of the box, and a large definite quantity of sulphurous acid gas is set free by the evaporation.

What is Aconitia?—It has been asserted that English aconitia is not identical with the German, and it is said that they differ not only in general characters and chemical composition, but also in their effects on the system. This is undoubtedly true; in fact, nearly a dozen different kinds of aconitia are recognised, varying so much in their properties that observations made with any one of them would be applicable only to that particular specimen and not to the others. It is generally admitted that English aconitia is seventeen times as strong as the German, but it is not uncommon to find one specimen seventy times as active as another. This discrepancy arises not only from differences in the mode of extracting the alkaloid, but also from want of care in the selection of the plants. In the British Pharmacopœia it is directed that the *Aconitum Napellus* should be used, but there is only too much reason to fear that other species are not unfrequently substituted. Some manufacturers use *Aconitum paniculatum*, which is almost inert; whilst others, for the sake of obtaining a more active product, employ the *Aconitum ferox*, the deadly Bish poison of India. Much of the aconite root now in the market is not the root of our common monkshood, but is obtained from Japanese plants of undetermined species. Some specimens of aconitia are white, some are yellow, some are crystalline, and others are amorphous. It is stated on good authority that the commercial aconitia is not an alkaloid at all, but is a mixture of several different alkaloids or active principles. The whole question is still *sub judice*, and all statements respecting the properties, chemical or physiological, of aconitia, must be accepted with a certain amount of reservation.—*Lancet.*

Mr. Springmuhl says, in a letter to the *Standard*, "It seems almost certain that the plant 'Aconitum' contains at least two separate poisonous alkaloids, different from each other. On the Continent 0·1 gram is regarded as *dosis letalis* of aconitine, while 0·001 grm. of Morson's preparation would prove fatal. Two possibilities, therefore, present themselves to the mind—viz.: Morson's preparation may be one of these two alkaloids, while the Continental aconitine is the other one; or Morson's preparation is a mixture of the two. As long as both—viz.: Morson's preparation and the Continental aconitine—are, as now in England, indiscriminately called 'aconitine,' fatal consequences will follow."

The *Pharm. Journ.* remarks, 11/3/82: "As *Aconitum Napellus* is specified by the B.P., the leaves of that variety alone should be used in preparing the extract: these are, under present conditions, the only means by which the pharmacist can seek to insure the uniformity of this preparation, and to secure themselves against the liability of doing serious mischief. The standardizing of aconite extract is at present a Utopian proposal, since we are not yet in possession of the knowledge requisite for the purpose. German aconitine is not always the same thing, one kind being from twenty to thirty times stronger than another. In like manner, it was found that aconitine of a French make differed from both the German kinds, and was eight times stronger than the most powerful of the two German kinds. Whatever danger there may be in the indiscriminate use of the term 'aconitine' to different preparations, it is in regard to the Continental aconitine that this danger is to be feared rather than as regards the aconitine, or, more properly, 'aconitia,' of the B.P., which is the only preparation which can be properly used in this country in dispensing." The *Pharm. Journ.*, 25/3/82, further remarks that "the preparation obtained from *Aconitum Napellus* by the method described in the B.P. is neither crystalline nor crystallizable, so far as we have been able to ascertain. It is well known that the method by which it is directed to be prepared was devised in a great measure with the assistance of the late Mr. Morson, and, consequently, that there is some good reason for the opinion that the aconitine known in trade as MORSON'S aconitine is made from the same material, and by the same method as the B.P. directs. We do not know of any evidence to show that it consists of a mixture of alkaloids; but, notwithstanding the work of investigation by Dr. Wright and his assistants, that has been done in this direction, it is still a question to determine—'What is aconitine?'—both from the chemical and pharmaceutical point of view."

Salts of Sesquioxide of Iron.—"All the salts of the sesquioxide of iron, without exception," says Mr. J. Creuse, of Brooklyn, "soluble and insoluble, form combinations with all the alkaline citrates, tartrates, and oxalates. Such combinations are invariably green, whatever may be the colour of the iron salt; they are all soluble in water, free from ferruginous taste, are perfectly stable, and miscible with preparations of Peruvian bark without decomposition." He adds that "it is always in the form of sesqui-salt that iron exists in all animal and vegetable substances which compose human food, and that, therefore, such compounds should be preferred to all others when iron is indicated."—*The Doctor*, February 1, 1874.

Pure Nitrate of Bismuth.—The best method for getting bismuth nitrate in a pure state is to dissolve the metal in nitric acid, being careful to leave a portion of the metal undissolved, and to throw the solution into a large quantity of water. The use of the small portion of bismuth left undissolved is to keep other metals—such as copper and silver—out of the solution. The acid nitrate of bismuth which remains in solution may be afterwards thrown down as carbonate or chloride for use as pearl powder.—E. H. Holmes, in *Pharm. Jour.*, 30/6/77.

Myroxocarpine.—A crystalline substance obtained by Dr. Stenhouse from white balsam of Peru, a specimen of which may be seen in the Museum of the Pharmaceutical Society.

Virgin* Camphor Oil.—This is an oil which exudes through the escape holes at the bottom of the large vats in which the Chinese manufacturers of Formosa stow the camphor previous to forwarding it to Hong-Kong and Calcutta markets. It is valued highly by the Chinese practitioners for its medicinal properties in rheumatic diseases. Samples of the oil have been sent home, but it has not been commercially introduced into Europe.—Robt. Swinhoe, F.G.S., H.M. Consul at Taiwan, in *Pharm. Jour.*, 1/12/63.

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* The Compiler has named this *Virgin* Camphor Oil, in contradistinction to the term "Camphorated Oil" made by dissolving camphor in olive oil.

Tasteless Epsom Salts.—Mr. J. W. Smith, of Nashville, suggests the following:—Liquorice root (deprived of its outer bark) 4 ozs., boiling water 2 pints, or q.s. Infuse with occasional stirring. Express through muslin, adding more water if necessary, until the residue in the strainer is tasteless; filter, and to the filtrate add 4 ozs. sulph. of magnesia. Finally evaporate to dryness over a water-bath. —*Review of Pharm.*

Koumiss.—Dr. Fairex, in *Electic Med. Jour.*, says the following is the proper way to make it:—Pour into a two-pint bottle 1 pint of pure fresh milk, add 1 tablespoonful of good brewer's yeast, shake it a little, and place it in a room of 80° or 90° F., let it stand thus (without a cork) for about 12 hours. By that time the fermentation will be completed, which may be known by the cessation of effervescence, and by the liquid separating into two distinct layers. Now take a one-pint bottle (a strong one) shake the milk and pour it into the pint bottle, cork it tightly and tie down with twine. In twelve hours it will be ready for use. The bottle should be shaken before using, and care taken in opening, as it powerfully effervesces; or by means of a small faucet forced through the cork, it can be drawn off by glassfuls. If kept a month it becomes slightly cathartic.

The following mode of preparing koumiss was sent by Dr. Townsend to the *Brit. Med. Journ.*, who says it was used so prepared by his father, in the treatment of phthisis, and answered well:—"Take one qt. of new milk, one noggin of fresh butter-milk, and three or four lumps of white sugar. Mix all together from jug to jug till the sugar is quite dissolved. Put it in a warm place to stand for ten hours. It will then be quite thick. Pour it again from jug to jug till it is smooth. Bottle it in soda water bottles; let it remain in a warm place for 36 hours. (24 in summer.) Use the best velvet corks; tie them down; shake the bottle well for five or six minutes before it is opened. It will have whey at the bottom when it is fit for use. It is to be made every day, and taken in quantities."

Koumiss combines all the elements of nutrition in most digestible and assimilable forms; unlike milk, it agrees well with the feeblest stomach.

True koumiss is prepared from mare's milk by fermentation, and is of Tartar origin. It is a piquant, sweetly acidulous fragrant liquid, which, when taken *in very large quantities at once*, produces a pleasurable excitement, without any bad after-effect, owing to a small quantity of alcohol which it contains.

Average composition of the more important kinds of milk :—

	Woman.	Cow.	Goat.	Sheep.	Ass.	Mare.
Sugar	4·8	4·6	4·3	5·4	6·4	7·3
Butter	2·9	3·6	3·4	2·4	1·3	2·1
Cheesy Matter...	2·9	5·1	4·4	4·8	1·9	1·5
Salts...............	2·21	0·6	0·8	0·9	—	
Total	12·9	13·9	12·9	13·5	9·6	10·9

The reasons which cause cows' and sheeps' milk to be less adapted for koumiss making have not yet been determined.

Koumiss presents many differences from those changes induced in milk by the ordinary methods. The process is accompanied with other derivatives of the milk which impart a peculiar character—physical as well as chemical; and according to With, Stahlberg, Hartier, and, more recently, Weinberg, koumiss is composed of *alcohol*, *lactic acid*, *sugar*, *finely divided caseine*, *fat*, *salts*, *carbonic acid*, *and water*. This represents mare's milk koumiss in its fresh No. 1 state. After having been in bottle for from five to ten days, according to temperature, it has changed into koumiss No. 2, which contains more alcohol and carbonic acid, but less solid matters; when shaken it is homogenous and sparkles like champagne—more acid than sweet, owing to the formation of acetic acid. By further age it becomes spontaneously No. 3, which not only contains all the elements of Nos. 1 and 2, but more or less butyric acid, succinic acid, acetic acid, and glycerine, in addition with increased proportion of alcohol and carbonic acid, and it is also more acidulous and sparkling than even No. 2, and rushes through the top of the bottle as a rich foaming liquor. The cow milk koumiss is a most agreeable beverage throughout each stage. Fresh or No. 1 koumiss is a mild aperient, and promotes the flow of bile; it is indicated, therefore, in constipation, especially when the complexion is sallow, and the conjunctiva is yellowish. So beautifully does it clear the skin, that its effect in this respect is proverbial in Moscow as the 'koumiss complexion.'

No. 2 koumiss is neither aperient nor constipating, but in other respects is midway between Nos. 1 and 3. It may be substituted advantageously for other drinks at meals, as it has a very agreeable taste, and is a great promoter of digestion.

No. 3 koumiss applies to chronic diarrhœa, relaxation of the nervous membranes, and to nervous debility; it is therefore well suited for bronchitis, winter coughs, and consumption. In such cases it is a benignant friend which has no rival. If it should be desired to impart an aperient property to either Nos. 2 or 3, it is only necessary to drink the latter with one-half of fresh milk. By this admixture the milk also becomes very digestible. Koumiss is susceptible of various modifications, such as thick koumiss, skimmed koumiss, whey koumiss, diabetic koumiss, medicated koumiss.—VICTOR JAGIELSKI, M.D., in *Milk Journal.*

Coca Leaves.—Dr. J. H. Scrivener, of Lima, states that the leaves are the produce of a shrub, and when mature, are gathered and sun-dried. Coca has been in use from time immemorial. Its properties are variable according to the quantity employed. It is a stimulant, a tonic, slightly narcotic, and very nourishing. It possesses an agreeable aroma, and a flavour similar to that of tea, and, like that plant, is employed in the form of infusion.

Carica Papaya.—Besides being used as a remedy for indigestion, it is said to be largely employed in Ceylon to produce abortion in married women who become pregnant at inconvenient times.—*Therap. Gaz.*

Bromine (from the Greek *bromas*) is a dark heavy reddish-black liquid (the only element liquid at ordinary temperature besides mercury). Its sp. gr. at 4° is 2·966; it freezes at 22° to a black solid, and boils at 63°. It possesses a very strong irritating smell resembling that of chlorine, and when inhaled acts as a strong poison; possesses bleaching powers, but feebler than those of chlorine.

Datura Stramonium (Thorn Apple), known also as devil's herb, or sorcerer's herb; the Arabs call it datora, the Persians tatula,—the word is manifestly derived from the radical "tat," which means to prick or puncture in allusion to the spurious envelope by which the fruit is protected. It is of all poisonous solanals the most energetic, and the most remarkable; it is the one which has caused the most serious accidents. A decoction of three capsules, made with milk, was taken in mistake, and it occasioned furious delirium, followed by general paralysis, which continued for several weeks.—F. T. GRIFFITHS, M.D.

Cocculus Indicus, a plant which has been recognised as a medicine since the days of the Arabian physicians, by whom it was described under the name of "Maheradsch," was probably first known in Europe as a poison for taking fish, which it first throws into convulsions, and then stupefies. All kinds of fish are killed by it; the barbel, it is said, taking the longest time to die. Fish are inordinately fond of the berries, and when rendered helpless by it, are readily caught. They should be removed from the water as soon as they appear on the surface, and their bellies emptied, or their flesh may become poisonous, and cause irritation if eaten. In nearly all civilized countries the use of cocculus for this purpose is illegal. It has also been used by unprincipled brewers to take the place of hops to impart bitterness to the beer, to give it "bottom," and render it more intoxicating. In an old treatise on brewing we find the following instructions:—"Three pounds of cocculus indicus to be added to ten quarters of malt: it gives an inebriating quality which passes for strength of liquor; it also prevents the second fermentation of beer, and the bursting of the bottles in warm climates." It is also said to be used by thieves and bad characters for drugging their victims.

Picrotoxin or Cocculin.—The active principle of cocculus indicus is colourless, inodourous, has an intensely bitter taste, and is neutral to test paper. It is soluble in water, alcohol, ether and fixed oils, and it crystallizes out from aqueous solutions in the form of beautiful stellate groups of colourless needles. In its physiological action it is most peculiar. In some respects its effects resemble strychnia. Tonic and clonic spasms of great severity and violence, culminating speedily in death, are induced by large doses, and opisthotonos and gasping are frequently concomitants. It induces spasmodic contractions, involving first a single group of muscles, and finally almost every muscle in the body. The tetanic cramps of picrotoxin differ from those of strychnia, in that the latter effects chiefly the extensors—that is the convulsions of picrotoxin more resemble the choreic, those of strychnia, the tetanic; in other words it exerts its influence chiefly on the cerebral centres, while strychnia affects the spinal.—*Pharm. Jour.*

Kauri Gum.—The districts in which this gum or fossil resin is found is generally covered with small mounds, which indicate its presence, and it is thus collected. The gum hunter carries a steel-tipped spear with which he probes the mass, a little experience enabling him to ascertain the existence of the gum without further search. It is found in blocks from a few ounces to 50 or 60 lbs. weight. The gum which is dug up is said to be used for dressing calicoes, while the recent resin, or that from the existing tree, *Dammara Australis*, is employed principally in varnish making.—*Pharm. Jour.*

Coal Tar Colours.—The derivatives from the destructive distillation of coal and wood seem almost to be inexhaustible. At the Exhibition in Paris, 1878, the whole series up to that date were admirably illustrated in the case of Messrs. Bindschedler and Busch, of Basle. From their information the following is condensed in the *Pharm. Journ.*:—Starting with *resorcine*, this, when heated to three-fourths its weight of phthalic acid, yields *fluoresceine.* This product, treated with bromine and caustic soda, yields *yellow eosine*, or tetrabromfluoresceine sodium, which is soluble in water, giving a solution that is beautifully fluorescent. The analogous tetraiodofluoresceine is blue, and is a new product of this firm, who have named it *erythrosine*; it is soluble in water, but the aqueous solution is not fluorescent. *Safrosine*, which is also soluble in water, is a nitrobrominated derivative of fluoresceine, obtained by treating tetrabromfluoresceine with potassium nitrate and sulphuric acid. It is also known in commerce as *ecarlate lutécienne nophaline* and *coeccine.* It is said to dye wool a beautiful intense bluish-red, and, when mixed with napthal orange, to replace cochineal in some cases with advantage. The eosines soluble in alcohol—*methyleosine*, *ethyleosine* and *primrose*—are obtained by heating tetrabromfluoresceine with a mixture of the respective alcohol and sulphuric acid precipitating with water, and converting the precipitate into a potassium compound by boiling it potassium carbonate. The product is a compound of the alcohol derivative of tetrabromfluoresceine with potash; it dissolves readily in equal parts of alcohol and water, giving a fluorescent solution. The varieties of eosine, soluble in alcohol, are said to give a more solid and pleasant colour than those soluble in water. The new dichroic blue from resorceine is said to dye silk reddish-blue with a very beautiful fluorescence.

The following are selected from the THROAT HOSPITAL PHARMACOPŒIA.

Acidi Lacticum Dilutum—Specific gravity 1030. $C_3H_6O_3$ + Aq.—Prepared from raw sugar, moist cheese, and chalk, by fermentation at a temperature of from 80° to 86° F. It is a colourless and inodourous liquid of a sour taste, miscible in water, rectified spirit, and, when concentrated, in ether. *Preparation:* Vapor Acidi Lactici.

Aldehydum Dilutum—C_2H_4O, mixed with alcohol.—A volatile liquid produced by the oxidation of alcohol. Diluted aldehyde is a limpid, colourless, and transparent fluid of characteristic etherial odour, and should contain 15 per cent. of pure aldehyde. It mixes in all proportions with water and rectified spirit. It is neutral to test paper, but acquires acidity by exposure to air from the production of acetic acid. It must, therefore, be kept in well closed bottles.

Oleic Acid.—Obtained by the action of sulphuretted steam on palm oil, and afterwards separating, by pressure, the oleic acid from the palmitic acid.

Character and Test: At ordinary temperatures it is an oily liquid of a sherry colour, with slight but not disagreeable odour. It is acid to test paper, insoluble in water, but is dissolved readily by rectified spirit, ether, chloroform, and fixed oils.

Preparations: Lin. hydrarg. oleatis, lin. hydrarg. cum. morphiâ, ung. hydrarg. oleatis.

Croton - Chloral Hydrate. — $C_4H_3Cl_3O,H_2O$, produced by the action of chlorine on aldehyde in the manufacture of chloral, from which croton-chloral is separated by fractional distillation. The crude croton-chloral is hydrated by treatment with hot water, and further purified and crystallized.

Character and Tests: In small white, pearly, glittering, tabular crystals, which have a pineapple odour and an acrid nauseous taste. It is freely soluble in glycerine, and in 1 part in 100 of cold distilled water.

Mistura Croton-Chloral.—Croton-chlor. 4 gr., glyc. 15 m., water 1 oz. Dissolve. Very useful as an anodyne in neuralgic affections of the throat. *Dose*: 1 oz.

Mistura Chloral Hydratis.—Hyd. of chlor. 20 m., syr. orange flowers 40 m., syr. tolu 40 m., water to 1 oz. Mix. To be taken largely diluted with water. *Dose*: 1 oz.

Ferro - Alumin. — $Fe_2(SO_4)_3(NH_4)SO_4 24H_2O$. — Iron alum is prepared by mixing equivalents of persulphate of iron and sulphate of ammonia. The crystals produced are of the usual octagonal shape, and of pale amethyst colour.

Preparations : Pigmentum ferro-aluminis—Ferro-alum 60 gr., aq. 1 oz.; m.

Vapor Ferro Aluminis.—Iron alum 3 grs., distilled water 1 oz. Dissolve. For atomised inhalation. *Use :* Astringent.

Ferri Perchloridum.—$Fe_2Cl_6 12H_2O$.—Perchloride of iron prepared by carefully evaporating liquor ferri perchloridi fortior, B.P., and setting aside to crystallize.

Character and Test :—In pale orange yellow, opaque crystalline masses, very deliquescent, and entirely soluble in water. This solution should not give a blue precipitate on the addition of red prussiate of potash.

Preparations : Injectio ferri perchloridi—Perchlor. of iron 60 gr., water 1 oz. Dissolve. *Use :* To produce coagulation of the blood, and promote suppuration of the cyst: 1 to 2 dr. is sufficient for an injection.

Pigm. Ferri Perchlor. Dil.—Ferri perchlor. 1 oz., aq. 1 oz. Dissolve.

Vapor. Ferri Perchloridi.—Perchlor. of iron 3 grs., distil. water 1 oz. Dissolve. For atomised inhalation. *Use :* Astringent.

Hydrargyri Cyanidum—*Cyanide of Mercury*, Hg. 2CN. *Syn :* Bicyanide of Mercury.—May be prepared by boiling sulphate of mercury in an aqueous solution of yellow prussiate of potash, and afterwards filtering and evaporating that crystals may be formed.

Character and Tests.—In colourless transparent crystals, having a nauseous metallic taste; heated, it yields metallic mercury, and cyanogen gas.

Preparation.—Pil. hydrarg cyanidi : Cyanide of mercury $\frac{1}{10}$th gr., sugar of milk $\frac{3}{4}$ gr.; triturate to a fine powder, and add mucilage acacia q.s.; m.; to make one pill.

NOTE.—Cyanide of mercury pills should be rendered tasteless by a covering of varnish.

Dose.—One twice a day.

Liq. Alumini Chloridi—(Al_2Cl_6 + Aq.)—This solution is obtained by dissolving alumina or aluminium hydrate in hydrochloric acid sp. gr. 1·250. It is a pale yellow transparent and inodourous liquid, with an astringent taste and strongly acid reaction. When evaporated it gives off the hydrochloric acid and leaves alumina. The solution gives a precipitate with caustic potash re-dissolved by excess.

N.B.—This is a purer and much more concentrated solution than the common disinfectant—chloralum, with which it must not be confounded.

Preparations.—Gargar. Aluminii Chloridi.—Solution of chlor. of aluminium 12 m., water 1 oz.; dissolve. *Use:* Astringent and antiseptic. Pigmentum Alum Chlor.—15 m. of solution to aqua 1 oz. Vapor. Alum Chlor.—3 m. of solution, distilled water to 1 oz. For atomised inhalation. *Use:* Astringent and antiseptic.

Thymol ($C_{10}H_{14}O$).—Thymol exists ready-formed in the volatile oil of thyme, horse-mint, and *Ptychotis agowan*—an East Indian plant, from which latter it is generally prepared. It crystallizes in transparent rhomboidal plates, melting at 111° F., and has a mild odour quite different from that of oil of thyme, an aromatic peppery taste, and boils at 428° F. It dissolves in about 300 parts of water easily in alcohol and ether, and in strong acetic acid.

Zinci Sulphocarbolatis ($C_6H_52Zn2SO_4$ + Aq.).—May be prepared by mixing two volumes of pure carbolic acid with one of sulphuric acid, heating to 290° F., allowing to cool, then diluting with water, and gently warming with a slight excess of oxide of zinc. On filtering and evaporating this solution, crystals are obtained, which should be carefully dried by exposure to air, or on bibulous paper.

Characters.—Colourless right rhombic plates, very soluble in water, and rectified spirit. The aqueous solution gives a white precipitate with sulphide of ammonium, but none with a solution of chloride of barium.

Preparation.—Collunarium Zinci Sulpho-Carbolatis.—Sulph. carbol. of zinc 2 grs., water 1 oz.; m. *Use:* Antiseptic.

Solutions of Nitrate of Silver are not recommended by the Editor of the *Throat Hospital Pharm.* for general topical applications to the larynx, except in cases of tertiary syphilitic ulceration, as he has never found the silver salt of more service than other metallic astringents. Even in the case of specific ulcers of the throat, the solution of sulphate of copper is as efficacious as that of nitrate of silver, and far less frequently creates spasm and nausea.

Pigmentum Chloral et Camph.—Camph. in coarse powder, hydrate of chloral, of each ½ oz. Rub together in a warm mortar until completely liquefied, and filter. *Use:* As an anæsthetic, applied externally in neuralgic affections of the throat.

Preservation of Herbs, &c.—Mr. T. M. Gessing, in a letter to the *Pharm. Journ.*, finding the leaves of foxglove become comparatively inert by drying and keeping, says "I adopted the plan of producing at once" (at the proper time) "the *whole year's supply*, and putting it into wide-mouthed stoppered bottles, with just enough spt. vin. rect. to make the powder sensibly damp, but not at all approaching *wetness.* This takes about 10 per cent. of spt., and answered thoroughly. If the powders are wanted very dry, drive off the spt. with gentle heat; if for tincture, they are always ready with the 10 per cent. of spt. If the plants were dried rapidly at a moderate heat, say 80° to 90°, and at once powdered and kept in the above manner, doubtlessly their active principles would be far better preserved; for instance, by 'pneumatic evaporation' described in the Chicago *Pharmacist.* The apparatus consists of a shaft 25 ft. high and 5 ft. square, containing a series of wire work frames, one above the other, 4½ inches apart, covered with netting, and moved upwards, altogether by endless chains. The heating apparatus, consisting of a steam coil, is placed under this chamber, from which currents of air, heated to any required temperature, pass up, through and around the herbs. Each frame holds about 20 lbs. The lowest frame is first placed in the chamber, directly over the heat, at the bottom of the shaft, where it remains from three to six minutes. It is then moved up 4½ in., and another frame of herbs is placed beneath it. At regular intervals the whole series of frames

(50 in number, containing 1,000 lbs.) are moved upwards 4½ in. The shaft being full, one frame is taken off the top, and one is put in at the bottom. This process does not destroy the volatile principles of any herb, as a sample of peach leaves so dried tasted quite as strongly of hydrocyanic acid as any fresh leaf. The degree of heat used is from 80° to 110°, according to the herb acted upon."

Digitalis and Primrose Leaves.—From a paper read by J. Woodland, F.L.S., before *The Chemists' Assistants' Association*, we glean that the two plants a good deal resemble each other, and the leaves of one have been mistaken for the other. The following table of the differences will assist to detect the true digitalis :—

FRESH LEAVES.

DIGITALIS.	PRIMROSE.
1. Apex acute.	1. Apex rounded.
2. Margins plane with midrib, or nearly so.	2. Margins curved downwards, as in revolute vernation.
3. Petiole winged, and veins extending down it.	3. Petiole very broad at base, without any veins in wings.
4. Shape ovate lanceolate.	4. Shape spatulate.

DRIED LEAVES.

DIGITALIS.	PRIMROSE.
1. Thick, crisp, brittle.	1. Thin flacid, bendable.
2. Show colourless reticulations when held up to light.	2. Show dark brown reticulations, or none, when held up to light.
3. Veinlets very prominent on under surface.	3. Veinlets project but slightly on under surface.
4. Lateral veins confluent for some distance with midrib.	4. Lateral veins terminate at midrib.
5. Petiole winged with veins continued in the wings.	5. Base of petiole very broad, with no veins in wings.

The presence in commerce of so many samples of the first year's leaves of the foxglove show that the directions given in the B.P. regarding their collection are not often considered, and the attention of pharmacists should be drawn to this fact, as the unofficial first year's leaves occur in *tufts*, and those of the flowering second year's plant *singly*.—*Chemist and Druggist.*

Adulteration of Camphor. — However carefully camphor is packed, it evaporates terribly in transit. The Chinese have discovered a method of adding to its weight, while at the same time preventing waste. A plant, known as the rattan creeper, is found in the interior; when digested in hot water it yields a glue, which is mixed with the camphor in the process of its manufacture. Thus adulterated, it will keep for two months without loss, but naturally its quality is injured and its usefulness impaired. From 30 to 40 per cent. of glue has been found, rendering the camphor unfit for use, and in some cases absolutely unsaleable.—*Chemist and Druggist.*

HANDY ANTIDOTES AND TESTS.

Antidote for Poisoning by Quassia. — Though unusual, a case is recorded in the *Lancet*, 14/8/80, which occurred at a hospital in the form of injection. The remedies found effectual in this case were powerful stimulants, such as ether, sal volatile, and brandy, aided by application of hot water to the feet. The pupils were strongly contracted, and the symptoms resembled somewhat those of poisoning by opium.

Pilocarpine, Antidote to Atropine.—A case of poisoning by 2½ grs. of sulphate of atropine was successfully treated, by Dr. Purgesz, by the administration of a centigramme of muriate of pilocarpine, every five or ten minutes, until 16 centigrammes had been taken.

Iodide of Starch, a Universal Antidote. — Bellini, in a paper read before the Medical Society of Florence, recommended the iodide of starch as an antidote for poisons in general. The absence of disagreeable taste and irritating properties allow this compound to be administered in large doses. This antidote is, above all, efficacious in poisoning by sulphuretted hydrogen gas, by the alkalies, and alkaline sulphides by ammonia, and principally by the alkaloids, with which iodine forms an insoluble compound: in this respect, it is preferable to the tincture of iodine. It aids the elimination of the salts of lead and mercury. In cases of acute poisoning an emetic must be given soon after the administration of the iodide of starch, to rid the stomach of the chemical products which result from the decomposition of the toxic agent, which in their turn might likewise become decomposed.—*La France Medical.*

M. Dorvault has proposed, says *Brit. Med. Journ.*, in cases of alkaloid, cyanic, and metallic poisoning, calcined mag., peroxide of iron, and washed powd. animal charcoal, equal parts. This mixture, however, changes by keeping. M. Jeannel suggests to keep separately—(1) a sol. of sulph. iron; and (2) a mixture of 80 grms. of calc. mag., 40 of animal charcoal, in 800 of dist. water. This mixture, added to sol. No. 1, forms the antidote which is to be given in successive doses of from 50 to 100 grms. (about 1¾ to 3½ oz.) This renders prep. of arsenic, zinc, and digitalis insoluble. It completely saturates free acids, and only acts partially on alkaline hypochlorides, and the oxides of copper.

Test for Methylated Chloroform.—(By H. W. Langbeck.)—Ten volumes of the suspected sample are mixed with one volume of a solution of nitrate of silver containing 1·7 of the dry salt, and the mixture is allowed to stand for 24 hours. After the lapse of this time, the line of contact of the two liquids has resumed a faintly reddish-violet colour, and a reddish-brown precipitate of silver oxide is found, more or less abundant, according to the proportion of methyl present.—THE MONTH, *Pharm. Jour.*

Test for the Purity of Oil of Sesame.—This oil is frequently used to adulterate. Olive oil, is itself often adulterated with cheaper oils, such as cotton seed, poppy, or mustard oil; the latter may be detected as follows:—Into a test tube put 10 c.c. of the oil of sesame, add carefully

4 drops of sulphuric acid, shake briskly for a few minutes, then add 4 drops of nitric acid, and shake again. If pure, it will acquire a deep green tint, which rapidly passes into a currant-red; if it is adulterated, no such change will take place.—*Jour. de Pharm.*

Testing Oils. — Maumené found, says the *Textile Manufacturer*, after experimenting with all the known methods for testing oils, the one with sulphuric acid to be the best. The test is made as follows:—In a graduated cylinder, to hold 150 centimetres, put 50 grms. of oil. Ascertain the temperature of the same, and add with a pipette 10 cubic centimetres sulphuric acid, stir with a thermometer for a few minutes, and note the highest degree of temperature. Pure olive oil gives an increase of 42 C.

50 gms.	Pineseed oil	gives increase of	43 C.	
,,	Tallow oil	,,	41 to 43½	C.
,,	Castor oil	,,	47	,,
,,	Horsefoot oil	,,	51½	,,
,,	Oil of bitter almonds [fixed]	,,	52	,,
,,	Rapeseed oil	,,	58	,,
,,	Earth-nut oil	,,	67	,,
,,	Sesame oil	,,	68	,,
,,	Hemp oil	,,	98	,,
,,	Nut oil	,,	101	,,
,,	Liver oil (raja)	,,	102	,,
,,	Cod (G. Morrhua)	,,	102	,,
,,	Linseed oil	,,	103	,,

—*Chemist and Druggist.*

Test for Nitric Acid in Lemon Juice.—Boil the juice with metallic copper; when red, fumes will be produced if nitric acid be present; or on concentrating the juice, the nitric acid decomposes the citric acid either wholly, or partically with formation of oxalic, acetic, and carbonic acids; so that on neutralizing the juice with lime a mixture of calcium salts is obtained.—*New Remedies*

Test for Arsenic in Fabrics.—Immerse the suspected paper in strong ammonia on a white plate or saucer; if the ammonia becomes blue, the presence of a salt of copper is proved; then drop a crystal of nitrate of silver into the blue liquid, and if any arsenic be present, the crystal will become coated with yellow arsenite of silver, which will disappear on stirring.—*Practitioner.*

Test for Castor Oil in Almond Oil.—If pure almond oil be shaken with half its volume of liq. ammon. fort. B.P. (diluted with an equal volume of water) a white emulsion is formed, and if any separation should occur it will be at the surface. With castor oil, the action of solution of ammon. is very slight, as it does not emulsify with this agent at all readily, but separates in globules. If 5 per cent. of castor be present in almond oil, the separation of globules to the bottom after shaking with liq. ammon. is very evident.—J. Woodland, F.L.S., *C. & D.*

Mushrooms.—These, according to Prof. Schiff, of Florence, have one common poison—*muscarina.* Its antidote is atropine or daturine. Italian apothecaries now keep these alkaloids in the rural districts, where the consumption of the non-edible fungi is apt to occur. The hint is worth taking in England.

Acids.—The alkalies. Common soap (soft or hard), in solution, is an efficient remedy, and has the advantage of being always at hand. It should be followed by copious draughts of tepid water or flaxseed tea. For *nitric* and *oxalic* acids, the carbonates of magnesia and lime (chalk and water) are the best antidotes. When sulphuric acid has been taken, the use of much water is improper.

Alkalies and their Salts.—The vegetable acids. Common vinegar being always at hand, is most frequently used. The fixed oils, as castor, flaxseed, almond and olive oils, form soap with the alkalies, and thus also destroy their caustic effect. They should be given in *large quantity.*

Baryta and its Salts, and Lime.—*Epsom* or *Glauber's Salt*, in solution, or diluted sulphuric acid. The fixed oils also have the same effect as with the alkalies proper, when these bases are uncombined.

Iodine, and Iodide of Potassium.—Starch, wheat flour, or arrowroot, in large quantities, well mixed with water. Let the patient drink *freely* of starch, or wheat flour and water, and afterwards of a strong mixture of vinegar and water (any acid in which there is oxygen); when this is done, the whole process of saving the patient's life is accomplished, and it will only be necessary to evacuate the bowels.

Cyanide of Potassium and Prussic Acid.—Chlorine water; solution of chlorinated soda; aqua-ammonia; cold affusion.

Antimony and its Salts.—Astringent infusions, as of galls, oak bark, Peruvian bark, or green tea very strong.

Arsenic and its Compounds.—Any oil or fat (sweet oil, butter, milk), magnesia in large quantity. Hydrated oxide of iron (recently made), in tablespoonful doses, every five or ten minutes.

Bismuth and its Compounds.—Albumen. Copious draughts of milk, with sweet mucilaginous drinks.

Copper and its Compounds.—Albumen, as milk or white of egg in solution, should be freely administered. Ferrocyanuret of potassium (freely). *Vinegar must be avoided.*

Salts of Gold.—Sulphate of iron, with a free use of mucilaginous drinks.

Salts of Iron.—Carbonate of soda, with mucilaginous drinks.

Salts of Lead.—Albumen; sulphate of magnesia (Epsom salt); sulphate of soda (Glauber's salt); diluted sulphuric acid; lemonade; opium.

Salts of Mercury.—Albumen, as white of egg; milk; or wheat flour beaten up with water; to be followed by an emetic.

Lead and Mercurial Poisoning is combated best, according to M. Melsens, by iodide potassium, by rendering soluble the metal accumulated in the system. Small daily doses of this salt will preserve workmen engaged in deleterious processes with these metals from the effects of poisoning.

Salts of Silver.—Common salt, freely in solution.

Salts of Tin.—Albumen; white of egg; milk; or flour.

Salts of Zinc.—Albumen; or carbonate of soda, with copious draughts of warm water, and especially milk.

Phosphorus. — Magnesia with water and copious draughts of mucilaginous drinks.

Gases.—Ammonia, cautiously inhaled, is recommended for chlorine. Asphyxia, produced by noxious gases, must be treated by copious cold affusions, especially to the head; blood-letting; artificial respiration; and stimulants carefully administered.

Creasote.—Albumen, or white of egg; milk; or wheat flour.

Alcohol, or Spirituous Liquors.—A powerful emetic should be given, followed by copious draughts of warm water. Congestion of the brain, and other symptoms, are to be treated on general principles.

Opium and other Narcotics.—The chief reliance is to be placed on the most active emetics (as mustard, alum, tartar emetic, or sulphate of zinc), and the stomach-pump. Emetics are preferable to the stomach-pump, when the narcotic has been taken in substance. The patient should be kept in motion, and cold water dashed on the head and shoulders.

Should the above means fail, the electro-magnetic battery, or if that cannot be obtained, artificial respiration must be resorted to.

Strychnia.—Emetics should be freely given. Kermes mineral tannic acid; tincture of iodine; chlorine water; ether or chloroform, by inhalation. If these means fail, Dr. Marshall Hall's ready method may be tried.

Strychnia.—The East Indian physicians recommend nicotia as the surest antidote, which is given in exceedingly small quantities in sherry several times a day. In default of nicotia, a decoction of tobacco leaves (½ oz. to 1 pint) is given.

Arnica.—Vinegar.

Aconite.—Stimulants, externally and internally.

Veratrum Viride. — Laudanum ; alcohol.—

To make Hydrated Oxide of Iron.—"Take of solution of tersulphate of iron, a pint ; water of ammonia, water, each, a sufficient quantity. To the solution of tersulphate of iron, previously mixed with three pints of water, add water of ammonia with constant stirring, until in slight excess. Then pour the whole on a wet muslin strainer, wash the precipitate with water, pressing the strainer forcibly with the hands until no more liquid passes. Lastly, mix the precipitate with sufficient water to bring the mixture to the measure of a pint and a half, and transfer it to a wide-mouthed bottle, which must be well stopped."—U.S.P.—*C. & D. Diary.*

THERAPEUTICAL NOTES.

Kurchi Bark (*Wrightea anti-dysentarica*).—An Indian drug. Bark and seeds said to be valuable in fever as a tonic, and the alkaloid *Kurchicine* not inferior to quinine in its anti-febrile action. The seeds contain an oil, and both bark and seeds are recommended in dysentery.—*Pharm. Jour.*

Asparagin.—In the *Med. and Surg. Report* Dr. Mary J. Matlack calls attention to the value of asparagin as a diuretic. She considers it to be one of the best remedies in dropsy, dependent on disease of the heart, and to be especially valuable in chronic gout. The dose given is 1 gr. three times a day, in conjunction with 12 grs. of bromide of potassium.

Stimulants of the Liver.—Benzoat of sodium has been found to be a very powerful stimulant of the liver, and the corresponding salt of ammonium slightly less so, while salicylate of sodium appears to be a certain and powerful hepatic stimulant, "never failing, when placed in the duodenum, to excite the liver within half an hour."—*Pharm. Journ.*

Therapeutical Action of Iron.—M. Martens, in an important essay read before the Academy of Medicine of

Belgium, arrives at the following conclusions as the results of his experiments on ferruginous preparations :—

1. As a general rule, the lactate of iron is the best preparation ; this conclusion he deduces from the chemical fact of the conversion of the other preparations of iron into lactates in the stomach.

2. It may be advantageously replaced by the carbonate, given in water, or in pills made with honey, so that superoxidation may be prevented.

3. All pills containing ferruginous preparations, in which the metal is liable to superoxidation, should be rejected, because they soon become so indurated that they are not easily soluble, either in water, or the natural fluids of the stomach.

4. The ferruginous preparations which are not easily soluble should always be administered to patients at meal time, so that they may become dissolved in the acid fluids then existing in the stomach.

5. Those preparations should be selected which cannot be precipitated, and so rendered insoluble by the alkaline fluids of duodenum, especially during what is termed *intestinal* digestion. He affirms that bread made of wheat flour may be rendered far more than ordinarily restorative by adding a little sulphate of iron before it undergoes fermentation, and that it is only thus an article of food entirely capable of replacing meat can be furnished.—*Annals of Pharmacy.*

To prevent Pitting in Small Pox.—Dr. Schunmer, in the *Gazette des Hopitaux*, advises a mask of pliant linen cloth, smeared inside with a mixture of carbolic acid, olive oil, and chalk, or starch in the proportion of 4—10 per cent. of the acid, or of thymol 2 per cent., with linseed oil and chalk, the mask being removed every 12 hours. One of the most simple means to prevent pitting, and a very successful one, is simply to exclude the light by hanging an opaque object in front of the window, the light apparently having an irritating action, causing the eruption to eat deeper into the skin.—THE MONTH, *Pharm. Journ.*

M. Bouchut finds the use of salicylic acid in small pox lessens the eruption and diminishes the fever of suppuration. The formula he uses is alcohol 10 to 15 grms., salicylic acid 1 grm., simple syrup 20 grms., water 50 grms. *Dose:* A tablespoonful every six hours at the commencement, or every four hours in the more advanced stage of the disease.

To Allay the Action of Sulphuric Acid on the Skin.—The intense suffering first experienced by sulphuric acid on the skin, ceases entirely in about a quarter of an hour after the application of a thin layer of soft paste of calcined magnesia and water. M. Alande states that the magnesia requires to be renewed in 24 hours, and that patients, after the recovery, retain no marks of the accident.—*Ibid.*

Tonic Glycerine (*Substitute for Cod Liver Oil*).—Glycerine 9½ ozs. by weight, tinct. iodine 30 drops, iodide potass 5 grs. Recommended by Dr. Larmande where cod liver oil could not be taken. *Dose:* A tablespoonful 15 minutes before each meal. This generally restores the appetite, and removes constipation. Pure glycerine is indispensable.

Picrotoxin, or Cocculin, as it is sometimes called, was discovered by Bouillay in 1812, and in composition is represented by the formula $C_{12}H_{14}O_5$, is the active principle of cocculus indicus (*Anamirta cocculus, the Menispernium cocculus L.*) It is a curious fact that, although this drug possesses such powerful and valuable properties, it has found little favour as a medicinal agent; and we (*Brit. Med. Journ.*) cannot help thinking that its general abandonment as a remedy was a singularly unwise step. It is a valuable local application in certain forms of skin diseases. In the east it has long been used, applied externally in the form of powder for the destruction of vermin on the skin, as well as for the cure of scabies; and in the form of ointment, it is said by Christison to be one of the best applications for the treatment of ringworm of the scalp. Undoubtedly a picrotoxin ointment made with vaseline or ozokerine would prove a welcome addition to the armament of the dermatologist.

M. Felix Planat has recommended this drug internally in epilepsy in the form of tincture made by macerating for three weeks 200 grms. of cocculus indicus in 1,000 grms. of alcohol. Of this he begins by giving two drops twice a day, and then each successive day increases each dose by one drop until 30 drops a day are being taken. He then gradually reduces the dose a drop at a time until the original dose is reached, when the treatment is suspended for a fortnight; after which it is renewed, and again intermitted alternately during six months. Cocculus indicus has also been found valuable in various diseases, by Gubler, Tschudi, Dr. Phillips, and others.

Muscarine and Picrotoxin in Phthisis.—Dr. Murrell gives in the *Practitioner* an account of the action of muscarine for night sweating of phthisis,* and publishes the following formula for a solution of picrotoxin which he uses in the same complaint:—Picrotoxin 8 grs., glac. acetic acid 4 drs., distilled water to 4 ozs.; mix and filter. This solution being 1 in 240, 4 minims are equal to $\frac{1}{60}$ gr. Pills of picrotoxin containing $\frac{1}{60}$ gr. are made by rubbing with sugar of milk, and adding glycerine and tragacanth. The average dose of $\frac{1}{60}$ gr. is usually given three times a day, the last dose at bedtime. He finds that muscarine acts in much the same way as picrotoxin and pilocarpine. —The Month, *Pharm. Journ.*

Pigmentum Ovi (Fever Hospital).—For the cure and prevention of bad sores: Albumen ovi, spt. vin. rect., of each 1 oz.

New Form of Taking Cod Liver Oil.—M. Fairthorn suggests a new method of taking cod liver oil, which consists of adding 2 drs. of tomato or walnut catsup to each ounce of the oil, the mixture being shaken before taken. He has found the mixture of catsup and cod liver oil to agree with many persons much better than any other form in which cod liver oil had been taken, and this he attributes to the association of substances generally employed as additions to food bringing into operation those digestive faculties of the stomach which might otherwise remain dormant. M. Fairthorn also states that the following mixture is readily taken:—Liebig's extract $\frac{1}{2}$ oz., ext. of celery seed $\frac{1}{2}$ dr., vinegar 1 oz., water 2 ozs., cod liver oil 5 ozs. The extract of beef is dissolved in the water, the vinegar and oil added, and the whole shaken with the ext. of celery.—The Month, *Pharm. Journ.*

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* See "Sulphate of Atropine," page 206.

Asthma.—A well-known physician prescribes the following:—Potas. iodid. 2 drs., tinct. lobeliæ 1 oz., aqua distil. 15 ozs.; m.; cap. coch. mag. f. m. d.—*C. & D.*

Cocoanut for Tape Worm.—Dr. Martiali says in *Annales de Med. Navali*, that this remedy has been known to the Antilles since the time of the aborigines. The nut is grated and eaten slowly by the patient. After three hours a dose of castor oil is taken, and the worm will pass away after five or six hours.—*Drug Cir.*

Chrysophanic Acid in Skin Diseases.—In some careful experiments, made by Squire and Finney, this acid was to be undoubtedly superior to pyrogallic acid, recommended by Dr. Jarisch, of Vienna, in skin eruptions. In one case opposite sides of a patient's body were treated with each acid, and that on which the former was used progressed much more favourably and rapidly than the other.—*Canad. Pharm. Journ.*

Cascara Sagrada in Constipation. — This drug appears to be attended with the best results. Amongst the formulæ for its administration, the following are recommended:—(1.) Ext. rhamni pursh. 1 oz., acid hydrocyan. dil. 1 dr., malt ext. 2 ozs., ext. berberis aquifol. 1 oz. *Dose:* A teaspoonful before meals. (2.) Ext. rhamni pursh. 2 ozs., syr. hypophosph. co. 4 ozs. *Dose:* A teaspoonful at night.

Berberis Aquifolium.—Of the above formulæ, the root of this plant, the so-called "Oregon Grape," has recently been introduced as a tonic and alterative. It is particularly lauded by certain medical journals for some diseases of the skin.

Elixir of Cascara.—Ext. rhamni pursh. 2 ozs., tinct. card. 4 drs., ammoniacal glycyrrhizin 30 grms., simple elixir to 16 ozs. *Dose:* A tablespoonful each day.

Elixir of Cascara Comp.—Ext. rhamni pursh. 2 ozs., ext. belladon. 64 m., citrate of strychnia 1 gr., tinct. cardam. 4 drs., ammoniacall glycyrrhizin 30 grs., ext. cocoæ 2 oz., simple elixir to 16 ozs. *Dose:* A teaspoonful each day.

Milk is recommended as the best vehicle for the administration of iodine. Dr. Hagar suggests the following formula for "iodized milk":—Iodine 1, alcohol 10, milk 90 parts.—*C. & D.*

Lupuline is a valuable remedy in *delirium tremens.* Some say it has sedative as well as tonic properties, but this is not generally admitted. It has a decided action on the urino-genital organs, tending to allay the excitement which causes spermatorrhœa. It also prevents nocturnal incontinency of the urine.

Remedy for Bad Breath.—Take from 5 to 10 drops of muriatic acid in an ale-glassful of barley water, in which some lemon peel has been infused, and add, when strained, a little lemon juice. To be taken three times a day for a month, and if effectual, continued occasionally.—*Oracle of Health.*

Pyrogallic Acid in Hæmoptysis. — Dr. Vesey, *Dublin Med. Journ.*, recommends 1 gr. doses, either alone or in combination with ergot, in this complaint. He prefers it to either gallic acid, pil. plumbi c. opio, dilut. sulph. acid perchlorid. of iron, &c. The dose, 1 gr., is given every half hour until the hæmorrhage is arrested, and then every four hours until the expectoration is no longer tinged with blood. From a dispenser's point of view, it may be favourably viewed, since it dissolves easily in water or spirit. It would be desirable to determine, however, whether the spirituous solution would keep, if exposed to light, without blackening or otherwise deteriorating.—*Pharm. Journ.*

Sulphate of Atropine. — According to the *Lyon Médicale*, in granules containing half a milligramme, given for eight or ten days, at intervals varying according to circumstances, has been found very valuable in subduing excessive perspiration in phthisis, &c.

Pressure in Cases of Headache.—Dr. Crombie says that a bandage, made of a spiral elastic fibre, worn tightly bound round the head gives great relief in cases of headache induced by influx of blood, or other causes, producing congestion of the temporal vessels.

Chloral Hydrate in Sea-Sickness.—An ordinary dose produces sleep usually in a quarter of an hour, and with almost unfailing certainty. Some cases published by Dr. Doring, of Vienna, seem to show the value of hydrate of choral in sea-sickness — even during prolonged sea voyages, giving a good night's rest, arresting violent sickness when it had set in, and stopping the tendency to its re-occurrence.—*B. Med. Journ.* Mr. J. H. Richardson, of Cork, in *Pharm. Journ.*, says "I have taken chloral five times on crossing the Irish Channel. On my first experience 50 grs. took me from King's Town to Holyhead as sound as a top; on crossing from Cork to Liverpool I took two 50 grs. doses, and slept the whole way, about 20 hours. If a smooth passage is expected, take no remedy. If sea-sickness is feared, take a good dose about half an hour before its occurrence is expected; keep warm, go to bed, and you will sleep. If the dose is delayed until nausea is felt the stomach will instantly reject the chloral, and the remedy prove unsuccessful."

Therapeutic Action of Chloral.—In a paper on this subject, in the *Michigan University Journ.*, Dr. S. G. Armor arrives at the following conclusions:—

1. Although a valuable sedative in cases of morbid wakefulness and general irritative action of the nervous system, it cannot always be relied on as a substitute for many of the old and well-tried anodynes and nervines of the *materia medica.*

2. In a certain proportion of cases it produces unpleasant symptoms, such as gastric distress, difficult breathing, partial paralysis of the organs of deglutition, great restlessness, and sometimes coma. These are largely exceptional, however, to its general action.

3. These unpleasant symptoms are, in many cases, obviated by administering an opiate in small sustaining doses to the nervous system before administering the chloral—say one-twelfth of a grain of morphine, or its equivalent of some other preparation of opium. The action of small stimulating doses of opium, administered twenty or thirty minutes before the chloral, appears to be antagonistic to its sometimes depressing effects.

4. The action of chloral is somewhat peculiar on the brain; it intensifies the action of alcohol by adding to its intoxicating properties. Great care should be exercised, therefore, in administering both agents at the same time, and in administering chloral with chloroform or ether.

5. It also intensifies the action of the so-called "*delirients*" of Headland, namely, belladonna, hyoscyamus and stramonium. Full doses of neither of these articles should be administered with full doses of chloral.

6. It is very sensitive to certain chemical re-agents, especially those of organic origin. It should not, therefore, be allowed to stand long dissolved in syrups; nor should it be combined in a mixture containing organic matter. It should be dissolved in simple water, and like all salines which act by absorption, should be well diluted either before or after taking.

7. It should never be administered on a full stomach, neither an empty one; intermediate periods are better. A good rule is, to select a period when the stomach is empty, and have the patient take a small crust of bread, or a cracker, ten or twelve minutes before taking the chloral.

8. Its action is somewhat transient. In two or three hours the dose must be repeated if the first produces no effect, or if we desire to protract the action of the drug. In urgent cases two or three doses can be administered at shorter intervals.

9. The dose varies in proportion to the amount of irritability or morbid wakefulness. Eight or ten grains, repeated every hour, or a larger amount every two hours, until twenty or thirty grains are taken, is usually sufficient to secure the specific action of the drug; although in severe cases much larger doses may be administered with safety. In a severe case of delirium, occurring during the progress of a continued fever, in which all the usual resources for securing sleep had failed, I advised that the patient take a drachm of the chloral at one dose. It had no other effect than that of producing quiet and refreshing sleep. The patient had taken several twenty-grain doses without any effect. These large doses, however, are not advisable, and should never be resorted to except in desperate cases, when other means and smaller doses had failed.

10. The protracted use of the drug is not advisable. It should be prohibited. It weakens the general vital forces, destroys the healthy tone of the nervous system, and tends to the production of anæmia (flatulence).

Chloroform as a Means of Improving the Taste of Cod Liver Oil.—Dr. Hager states that the addition of 10 drops of chloroform to 100 grms. of cod liver oil renders that fluid perfectly agreeable and palatable to take, without in the least impairing its good qualities or interfering with its therapeutical value.—*Chemical News.*

Chloral Hydrate and Cod Liver Oil.—Ten grms. crystallized pure chloral hydrate dissolved by digestion in a sand bath in 190 grms. cod liver oil renders the latter more palatable; used by consumptives, the preparation diminishes the night sweats, produces sound sleep and improves the appetite. *Dose:* Six tablespoonfuls daily.—*Pharm. Zeit.*

Dose of Chloral Hydrate. — This varies very much. I have prescribed 50 grms. without effect, but by pushing it to 75 grms., excellent and most invigorating sleep was procured.—CHARLES KIDD, M.D., in *Pharm. Journ.*

Chloral as an Antiseptic.—Mr. Stoddart, of Bristol, has recently examined the stomach, lung, heart, kidney, and spleen of a patient who died from an overdose of chloral hydrate. "The first thing," he says, "that struck me was the very extraordinary way in which the several portions were preserved. Even now, although more than a week has elapsed since death, yet not the slightest sign of decomposition has taken place, nor any unpleasant odour. This, doubtless, is the effect of chloroform in the tissues."—*Medical Press and Circular.*

Mr. R. Fletcher, *Phil. Med. Times*, has found chloral hydrate of great use in relieving chronic bronchitis in elderly persons when used as an inhalation. A solution of 10 grs. in 1 oz. of water is inhaled through a steam atomizer morning and evening.—*Pharm. Journ.*

Salicylate of Quinine in Gout.—Dr. A. Hewan has called attention in the *Lancet* to this preparation as a remedy for rheumatic gout and rheumatism, and states that while toxic effects more or less serious result from the administration of salicylic acid and salicylate of soda in doses thought necessary to reduce the temperature, no injurious consequences whatever have hitherto followed the free use of salicylate of quinine given even in its full dose of 3 grains, while greater benefit has been derived from it than from salicylate of soda, or salicylic acid.

Chloride of Ammonium.—Dr. Underwood instances, in the *British Med. Journ.*, the excellent effect of this chemical in neuralgia. The dose given was 20 grs. every three hours.

A Curious Fact is noticed by Schlacfke, in *Graefe's Archiv.*, worthy the attention of pharmacists, who, if ignorant of it might be blamed for badly-prepared medicaments. It is, that if calomel be applied to the eye, and iodide of potassium administered internally, severe inflammation of the conjunctiva is liable to arise.—THE MONTH, *Pharm. Journ.*

Nitro-Glycerine in Angina Pectoris. — Mr. Martindale has made the important observation that nitroglycerine is readily soluble to the extent of 15 per cent. in almond or olive oil, and he is of opinion that a 1 per cent. oily solution would in many cases be preferable for medicinal use to the alcoholic solution of the same strength, it being stable, non-volatile, uninflammable, and perfectly inexplosive. Nitro-glycerine is also readily soluble in melted cocoa butter, but care is necessary to prevent, by frequently shaking the solution, a separation during the cooling. To such a medicated fat of definite strength sugar may be added, and the mass may then be rolled into pills, and varnished.—*Pharm. Journ.*

Domestic Vermifuge.—Half a dozen walnuts eaten in the morning fasting serve a good purpose in expelling worms; do not skin the kernels.—*The Pharmacist.*

Scrofulous Sores.—A Scotch clergyman states in the *Edinburgh Medical Journal*, that 3 grs. of corrosive sublimate in a pint of whiskey constitutes an almost infallible remedy in scrofulous sores, or runnings. A rag dipped in this twice or thrice a day should be kept on the ulcers until healed.

APPROVED REMEDIES.

FOR CHOLERA AND DIARRHŒA.

M. Wilk's Cholera Mixture.—This consists of equal parts of laudanum, tinct. rhei, and spt. camphor. Begin with 30 drops taken clear and unmixed, with a little sugar in the mouth afterwards; repeat the dose after every evacuation, increasing it if the case becomes urgent to 60 drops (a teaspoonful), or 90 drops if necessary. If the diarrhœa is not controlled by this means an injection of from 30 to 90 drops of laudanum in a tablespoonful of starch will prove a valuable help. This may be often repeated. If the diarrhœa ceases, do not entirely intermit the medicine, but give in gradually diminished doses every one or two hours for a period of twelve or even twenty-four hours.

2. For the vomiting stage the best remedy is laudanum, tinct. capsicum, tinct. ginger, tinct. cardamoms, of each equal parts. To be given 40 to 60 drops undiluted, and followed by sugar, after every fit of vomiting, taking care to give it as soon as the fit ceases; when a useful adjunct to the medicine will be a mustard poultice to the abdomen.

3. For the stage of malignancy, the only remedy is stimulants, especially brandy, which must be given with great freedom, from two to four teaspoonfuls every half or even quarter of an hour till heat returns, and pulse and sensibility are restored. It is always to be given undiluted. Alcohol would answer if brandy is not to be had. Continue with this artificial heat. Bottles of hot water, fricture of the limbs (which no one need fear apply), and mustard, perhaps, to the feet and hands, stomach and limbs. Be bold rather than cautious.—*Pharm. Journ.*, 4/8/77.

Dr. Jacquier, of Nantes, it is stated in the *Medical Times and Gazette*, has found oxide of zinc to produce rapid cure of diarrhœa. He gives it in the following manner:—Oxide of zinc 54 grs., bicarb. soda 7½ grs., to be divided into four packets, one to be taken every six hours. In several cases in which this remedy was found successful, diarrhœa had continued for several months, and other remedies had produced no improvement. In all the cases three or four doses were found sufficient.—THE MONTH, *Pharm. Journ.*, 26/10/78.

Summer Diarrhœa Mixture.—P. cretæ co. ½ oz., conf. arom. ¼ oz., ammon. carb. ½ oz., ol. cassiæ 15 drops, tinct. opii 80 drops, tinct. cardam. co. 1 oz., tinct. catechu 6 drms., tinct. camph. co. ½ oz., spt. æth. chlor. ½ oz., mistur. camph. vel. aqua menth. ver. 14 ozs. Adult dose ½ oz. to 1 oz.

Dujardin-Beaumetz's Diarrhœa Mixture.—For general use.—Vini opii 15 drops, subnit. of bismuth 150 grs., peppermint water 2½ oz., lettuce water 2¼ ozs., syr. of rhatany 1 oz. Mix. *Dose:* one or two tablespoonfuls, according to age.—*New Remedies.*

Aqua Lactucæ (*Eau de Laitue*) is prepared by distilling the following:—Tops of *lactuca sativa L.* 1 part, with water 2 parts, until 1 part of product is obtained.

The following are contributed to *New Remedies*, by Dr. Charles Moore. It is not possible to recommend a formula which would be applicable in all cases. As remedies in simple diarrhœa, accompanied by tenesmus, and colicky pain, &c., **Dr. Squibb's Cholera Mixture, and Velpeau's Diarrhœa Mixture** are probably the best.

DR. SQUIBB'S.—Tinct. opii, capsici, spt. camphor, of each 1 oz.; chloroform 3 drs., alcohol 5 ozs. *Adult dose:* 20 to 40 min. in peppermint water.

VELPEAU'S.—Tinct. opii, rhei, opii camphoratæ, of each 1 oz.; spt. menth pip. 10 drms., tinct. capsici 6 drms. *Adult dose:* 20 to 40 min. in peppermint water.

The following mixture will also be found useful in cases where diarrhœa exists without much pain:—Tinct. kino, tinct. krameriæ, of each 1 oz.; syr. krameriæ, syr. rhei aromat., of each ½ oz., tinct. zingib. 1 drm. *Dose:* 1 to 2 drms. in 1 oz. camphor water.

FOR SYPHILIS, GONORRHŒA, &c.

Iodoform for Chancres.—"All chancres," says a writer in the *Practitioner*, "are best treated with iodoform. Under its use healthy sores heal rapidly, creeping sores generally cease to spread, and sluggish ones take on healthy action. My own experience," says the writer, "supports this statement most fully. I cannot explain the manner in which it acts, but that it does have a most remarkable effect in promoting the healing, not only of ordinary chancres, but of many other sores, I can have no possible reasonable doubt. It is what I might call a *reliable* remedy; its effects seem almost magical. You sprinkle a little of the crystals, powdered or unpowdered, over the sore, cover this with a bit of dry lint, and at your inspection next day you find that healing has progressed rapidly. The sore has filled in considerably if it is a deep one. There is but little discharge, and no bad odour, and you have only to repeat the dressing, and so go on from day to day until the healing is complete.

French Cure of Gonorrhœa.—By M. Velpeau.—The following is M. Velpeau's favourite remedy:—Take of balsam of copaiba 2 drs., powd. cubebs 6 drs., powd. opium 2 grs., mix, and add sufficient of carbonate of magnesia to form a paste, which is to be divided into six parts—one to be taken three times a day, and, generally speaking, three doses will effect a cure. But we should not discontinue the administration of it for a few days after, or the discharge is very likely to return, and, what is worse, in increased quantity. Commence by ordering the medicine according to the preceding formula for *three days*, then one day is to be passed without any being taken; on the fifth it is to be resumed, and continued for three days more—then an intermission, and on the ninth commence again and continue for three days more; this will be found mostly to be quite sufficient. You must, however, always pay particular attention to the state of the stomach and bowels during its use.

Speaking of the nitrate of silver as an injection, which he prefers to sulphate of zinc, and all other injections, he says: "I have tried it myself very frequently, and of various degrees of strength: with one grain to the ounce it has been eminently useful, particularly in old standing cases, when the quantity has been increased to two grains to the ounce. Of four patients treated according to this plan, two were cured in five days, thus affording proof of its efficacy in the chronic form; but when carefully used, together with compression of the urethra, it is also very useful in the acute stage. The way in which the compression is to be made is by the application of small compresses placed along the lower portion of the urethra (the bulb and membranous portions), and retained there by a bandage; the solution is then to be injected, and retained in the canal for two or three minutes: this is to be repeated two or three times a day; and after continuing this for three days I stop, but return to it again if the complaint be not entirely removed. Proceeding on this plan, several patients in whom the complaint had resisted all other remedies have been cured; but in using compression, you should be aware that occasionally the glans penis and prepuce become inflamed, and of a greater or less livid hue; these circumstances, however, should not deter us from its use, but as these symptoms arise, so they should be treated by warm fomentations, emollient enemas, taking care not to keep up the compression for too long a time. A good deal has been said of the injurious consequences following the use of injections, some asserting that the fluid may pass into the bladder, and produce fatal inflammation of it; so much has this been spoken of, that many of the more timid practitioners have entirely discarded the use of these remedies, but in my opinion these serious accidents are merely chimerical. It has likewise been asserted, that they are the cause of stricture being formed: now, I do not consider so, as stricture is but the thickening of the lining membrane of the urethra; it is more likely to ensue from long standing inflammation than the use of astringents."

Mixture for Acute Gonorrhœa. — Salicylic acid 12 grs., bicarb. soda 6 grs., syr. 1 dr., water 3 drs., ess. wintergreen q.s. to flavour. One dose. To be repeated every four hours until inflammation subsides, when copaiva should be given and injection used. Six doses are usually ordered, and rarely fail to effect the desired result.—*The Druggist.*

Injection Brou. — According to William Fox, 49, Haymarket, the following is the composition of this celebrated injection:—Aqua distil. 100·0, zinci sulph. 0·5, plumb. acet. 1·0, tinct. catechu 2·0, Sydenham's laudanum 2·0 grammes.—*Pharm. Journ.*

In gonorrhœa, Dr. Hearn recommends the following prescription of Prof. Pancoast's :—Alumin, pulv. 1 dr., cubeb. pulv. 7 drs., myristic. pulv., cinnam. pulv., of each 2 drs. ; m., f. chart 20. One to be given several times a day. In some cases the cubebs may be greatly increased. Whenever the discharge is profuse, a few doses of these powders will reduce it.—*Phil. Med. Times.*

Dr. FARREN says (*France Médicale*), in order to obtain the most satisfactory results, he employs cubebs and the balsam, not two or three as is usually done, but ten or twelve times daily. In this way there is commonly a steady amelioration of the symptoms, and in most cases a cure in about 26 days. It is not stated, but the doses may be presumed to be proportionately smaller.

Gurgun Balsam is recommended in *Bouchut's Ann. de Therap.* for gonorrhœa and viginitis. It is extracted from various decotyledonous trees, is turbid, and of a brown colour, bitter, smelling like copaiba, but with a less unpleasant odour, whilst it is less acrid and less expensive than this drug. It is also more readily tolerated. It is administered in capsules or in the form of an emulsion. In the latter form Vidal gives 4 grams a day immediately before meals ; in larger doses of 10 or 12 grams it produces vomiting and diarrhœa. Prescribed at the beginning of gonorrhœa, it cures in about 15 or 20 days. It is, however, better employed when the inflammatory stage is over, and it is found very useful in gleet. In the female it is used as a local application ; the vagina being first washed out with warm water ; a plug of cotton wool soaked in equal parts of balsam and lime-water is applied by means of the speculum, and the plug is then covered with a second one of dry wool, the dressing being renewed daily. This produces slight smarting, which disappears after the third application.

Compound Copaiba Mixture.—Bals. cop. 3 drs., oil cubeb 1 dr., p. gum 2 drs., sweet spirit nitre ½ oz., tinct. ferri perchlor. 2 drs., tinct. of opium ½ dr. Rub the balsam and oil of cubebs with the gum, adding a few drops of water, then add the nitre and tinct. of opium, and lastly the iron, previously diluted with 6 ozs. of peppermint water or camphor water. *Dose:* Sixth part twice or thrice a day. Each dose contains—bals. ½ dr., cubeb 10 drops, gum 1 scruple, nitre 40 drops, opium 5 drops, and iron 20 drops. Valuable in gleet.

Soluble Copaiba.—To a saturated solution of carbonate of potash add pure balsam of copaiba; boil them for half an hour or more, and let stand to clear. Distilled water must be the vehicle for its administration.

Sulphate of Zinc Injection.—On this preparation a medical officer, of considerable hospital experience, says: "It has proved highly beneficial in a case of gonorrhœa, rapidly lessening the discharge, and causing but slight pain. From the rapidity of the change in the character of the discharge, after each injection, it would appear as though it acted not only as an astringent, but also as an antiseptic, causing decomposition in the pus, with which it came in contact; and subsequently in its chronic stage an injection formed of 1 gr. to 1 oz. held in solution by a sufficient quantity of sulphurous acid, caused a complete cure, without pain or inconvenience." The *acid sulphate of zinc lotion* is prepared with zinc 8 grs., sulphurous acid B.P. 1 dr. Mix. When dissolved add distilled water 1 oz. and 7 drs.

Injections. — Tincture of aconite vel. fluid ext. of aconite leaves 1 dr., water 1 oz.; or permanganate of potash 3 grs., water 1 oz.

Caroba Leaves in Syphilis (*Cybistax antisyphilitica*).—Of this new remedy for syphilis Mr. Chas. E. Edison, M.D., writes in the *Chicago Times*:—In one case of secondary syphilis his patient had been unable to perform any manual labour, and had lost his appetite for some time. For two weeks he was kept on full doses of iodide of potassium and comp. stillingia syrup, and then was given 30 drops of fluid extract of caroba three times a day. In four weeks he had gained 30 pounds, was able to do a full day's work, and at the end of four weeks was discharged cured. Another patient with hereditary syphilis was treated in the same way, and was cured in six weeks. In primary syphilis, attended with scrofulous diathesis, caroba was equally successful. Mr. Edison concludes by recommending it in all stages of syphilis, "but its most prompt action is manifest in old syphilitic ulcers and eruptions."—*Christy's New Commercial Plants and Drugs.**

Chaulmugra Oil has also been highly recommended in a pamphlet by Mr. Le Page, now out of print. A case in which the bones of the nose were completely destroyed by syphilis, as was the soft palate, the pharynx was covered with unhealthy ulcers, deglutition was difficult, and the patient had lost his voice from chronic laryngitis. Considered a hopeless case. After regulating the natural functions, and cleansing the sores with strong blue-stone wash, he was put under a course of chaulmugra, a six-grain pill given thrice daily. The general health improved rapidly, the sores healed, and *he left the hospital stout and well in six weeks.—Ibid.*

FOR CHILBLAINS, SCALDS, BURNS, &c.

A foreign medical journal states, if essential oil of peppermint for burns be applied to the spot by a camel-hair pencil, the smart is soon relieved, and the place heals without a scar. Mixed with half its weight of glycerine, and applied in the same way, the oil is a good remedy for chilblains and frost-bites.

Ointment for Broken Chilblains.—Sweet oil 1 pt., Venice turpentine 3 ozs., lard ½ lb., beeswax 3 ozs. Dissolve these ingredients in a water-bath. Mix with a wooden spatula till thoroughly mixed. This ointment improves with age.

Swediaur's Ointment for Chilblains. — Sweet almonds (blanched) ½ lb., honey 6 ozs., camphor, flour of mustard, burnt alum, olibanum, of each 2 ozs., yolk of eggs 3 ozs. Triturate well. Thin this paste in a little water, and rub on the inflamed parts night and morning; then wash it away with tepid water. The skin afterwards to be well dried with a linen cloth.—*C. & D. Diary.*

Poultice for Foul Ulcers.—Carotæ radicis contus. 1 lb., pulv. conii 1 oz., tere simul. et adde, vin. opii 3 fl. ozs., fiat cataplasm.

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* Published by Christy & Co., 155, Fenchurch Street, E.C.

Pigmentum Oleo Ricini c. Collodio (Fever Hospital).—For Superficial Burns: collodii 4 drs., ol. ricini 1 oz. Mix. This is an excellent remedy. Should be applied with a broad varnish brush.

Dr. Valentine Mott's Remedy.—Ox gall 4 ozs., ol. turpentine 4 ozs., spt. vin. rect. (90° per cent.) 1½ ozs., tinct. opium 1 oz., mix; or beef brine 1 pint, nitrate potash 2 drs., aqua ammon. 3 ozs., mix. Apply with friction.—*Scient. Americ.*

Mustard Chilblain Liniment (W. H. Lumbus, Walsall, in *C. & D.*).—Gum camph. 2 drs., pulv. canth. 2 drs., pulv. sinapis opt. 4 drs., ol. cajeput 1 dr., ol. rosmar. 3 drs., spt. turp. 10 ozs. To stand 14 days and filter. To be well rubbed in every night and morning if the chilblains are not broken.

Dr. Dewar's Lotion for Chilblains.—Acid sulphurous, glycerine, of each 1 oz., aquæ dest. 2 ozs. Misce. The theory of the action of sulphurous acid as a remedy for chilblains, ulcerated wounds, as well as sore throat, bronchitis, and many other affections, is that it has the power of stopping all fungoid growth, and consequently at once arrests and prevents fermentation. Carbolic acid has a precisely similar action, and will probably be found to be even more effectual than sulphurous, though there are obviously cases in which it cannot be so conveniently employed.—*C. & D. Diary.*

Liniment (No. 1).—Tinct. canthar., solution ammon., soap liniment, equal parts. Apply with friction.

Liniment (No. 2).—Tinct. aconite 1½ drs., comp. camph. lin. 4½ drs., glycerine 2 drs.

Liniment (No. 3).—Dr. Fergus says: "Sulphurous acid is a remedy that has a surprising effect, especially in their irritating tormenting stage. It should be applied with a camel-hair brush, or what is better a spray producer; one application usually effecting a cure. A good wash for hands or feet affected is sulphurous acid 3, glycerine 1, and water 1 part."—*Lancet.*

Liniment (No. 4).—Tannin 1, glycerine 3 parts. Applied with gentle friction.

Liniment (No. 5).—A. T. Girdler, in *Pharm. Journ.*, recommends lin. belladon. 2 drs., lin. aconite 1 dr., acid carbol. 10 m., collodion 1 oz. Mix. Apply with a brush. If broken omit the aconite.

Bruised Wounds. — Collodion 2 fl. drs., tinct. of arnica 1 fl. dr.

Glycerine 1 fl. oz., powd. borax 2 fl. drs., rose water 8 fl. ozs.

Sore Nipples.—Ferri sulph. gran. 60 grs., aqua dest. 8 fl. ozs. Apply as a lotion.

Mix the white of an egg with two drachms of water, and apply as a lotion.—*C. & D. Diary.*

Application for Burns. — Dr. A. D. Binkerd, of Philadelphia, recommends carbolic acid 5 to 10 drops, thoroughly incorporated, with glycerine 2 ozs., spread on with a camel's-hair brush, then a layer of cotton wool, over which a roller-bandage is neatly adjusted. For the suppuration process — yellow wax, melted and strained, 1 oz., raw linseed oil 3 ozs., tannin 1 dr., subnitrate of bismuth 20 grs. Melt the wax, add the oil—stirring until incorporated—the tannin, and then the bismuth. To be applied on lint. Dr. W. Campbell, of New York, says—"The following is one of the best applications in cases of burns and scalds where a large surface has been denuded of the cuticle:—Take 1 drm. of powdered alum and mix thoroughly with the white of 2 eggs and 4 ozs. of lard; spread on linen cloth and apply to the parts burnt. It gives almost instant relief from pain, and by excluding the air, prevents excessive inflammatory action. The application should be changed at least once a day."

Thymol and linseed oil (1 to 100) forms an excellent dressing for burns, &c.

FOR BOILS, &c.

Sulphide of Calcium. — The *Family Physician* speaks thus confidently upon this remedy in answer to the question "What is the best remedy for boils?"—Sulphide of calcium undoubtedly. A $\frac{1}{10}$ gr. should be taken hourly, or every two or three hours. It lessens the inflammation, and reduces the area of the boil; moreover, it liquefies the core, so that it suppurates more speedily. This medicine often converts the boil into a little abscess, which soon bursts, and the whole thing is over. If the sulphide is taken sufficiently early the boil often dries up, the inflammation subsides, and a hard knot is left, which disappears in a few days without the formation of a core and without any discharge. The sulphate exerts a marked influence on the general health, removing the debility and *malaise* so frequently associated with these eruptions. Not only will the sulphide of calcium, taken in the proportion we have mentioned, cure existing boils, but will often prevent the formation of fresh ones.

As an external application, Dr. Planat, of Nice, recommends arnica in the following form:—10 grs. of extract of fresh arnica flowers to 20 grms. of honey, thickened to an ointment consistence, with lycopodium, althea, or any similar powder. It is spread on diachylon plaster or oiled silk, and applied to the boil. To be renewed once in 24 hours. Two or three applications generally cause the boil to die away at all stages of its evolution.—*Journ. de Thérapeutique.* He also recommends arnica internally in the form of tincture, taken in doses of three or four drops every two hours.—THE MONTH, *Pharm. Journ.*, 28/9/78.

FOR PILES.

Ointment for Piles.—Morphiæ 2 grs., ol. olivæ 2 drs., tere optime simul. et adde, ung. zinci 1 oz., pulv. gallarum 1 dr., ft. unguentum.—*C. & D. Diary.*

Mixture For Piles.—Sulphuris loti 1 dr., magnes. 15 grs., tere simul. cum mucil. acac. et adde, mis. amygd. 10 drs., syr. croci ½ dr., fiat haustus.—*Ibid.*

Dr. A. Young strongly recommends glycerine for the relief of internal piles, two or three teaspoonfuls taken with water and a little lemon juice night and morning. In all cases the feeling of discomfort and bleeding have been arrested.—*The Practitioner.*

For Blind Piles.—Dr. Posqua, of Italy, recommends the following:—Ext. belladon., 5 grs., iodoform 1 gr., acet. of lead 1 gr., vaseline 75 grs. Mix. Apply three or four times a day, after bathing the swellings with warm water.—*Drug Circular.*

For Itching Piles.—Dr. J. F. Gibbon, San Francisco, recommends the following:—Hyd. chlor. cor. 8 grs., aqua 8 ozs., spt. lavand. co. 6 drs. Apply 3 times a day.

Dr. A. V. Banes, St. Joseph, Mo., prescribes: Goulard cerate ½ oz., ung. hyd. nit. ½ oz., adepis or vaseline ½ oz., morph. acet. 1 scrup., or pulv. opii 20 grs., p. acet. plumbi 25 grs., p. gallæ 30 grs., simple cer. 1 oz., glycerine 60 drops. Apply night and morning.—*Med. Brief in C. & D.*

FOR DIPHTHERIA AND CROUP.

Dr. A. de Grand recommends *ice* as a specific in cases of diphtheria; several cases are given in which the remedy was perfectly successful.

Dr. W. W. Campbell, New York, says: "A gargle of permanganate of potash (10 grs. to 20 ozs.) is very efficacious in cases of diphtheria; it must be used very frequently, and iron and port wine taken internally at the same time."

Lemon Juice has been recommended in France as a most effectual remedy for diphtheria.

Both diphtheria and croup are said to be curable by the administration of equal parts of fluid extract of eucalyptus and jaborandi, about 5 or ten drops of each every half hour till relieved, then every one to two hours to keep up moderate ptyalism (salivation).

Croup.—Nitro-glycerine, dissolved in 100 p. of olive oil, has been found efficacious in croup.

Papaine in Diphtheria.—Papaine or Papayolin is the active principle of the fruit of a tree called the Papaw tree *(Carica Papaya L.)* Dr. Boucher, in conjunction with Dr. Wurtz, who has tried papaw so successfully, has obtained good results with this drug in diphtheria. A solution of 10 to 30 drops, applied as a paint, rapidly dissolved the false membranes. A number of cases in the hospital for children were cured by this treatment.—*Journ. de Thérap.*

Physicians in Germany, in cases of diphtheria, give papaine in doses of 4 to 5 grains, and paint the throat with a solution (1—10) with great success.

Prof. Rossbach has ready for publication an important work on Papaw as a remedy for diphtheria, &c., which will no doubt give the best information as to the administration and application of this important drug.—CHRISTY'S *New Commercial Plants and Drugs.*

FOR WHOOPING COUGH.

Dr. Z. T. Dillenbaugh recommends the use of picrate of ammonia. He gives the following formula:—Picrate of ammon. 1 gr., muriate of ammon. 26 grs., powd. ext. of liquorice 1 dr., water 3 ozs. For a child under six months, a teaspoonful; for one to two years, double quantity; from three to five years, three teaspoonfuls.—*Phil. Med. Times*, in *Pharm. Journ.*

In Germany hydrobromate of quinine has been used with some success.—*Pharm. Journ.*

The *Bulletin Therapeutique* says: Tinct. of myrrh, given in doses of 15 drops, every one or two hours in a tablespoonful of quinine or Vichy water. Dr. Mott, of New York, recommends quinine as a remedy, on account of the influence of this drug in preventing the growth and development of the fungus, which he, as well as Dr. Letysrich, has found in the sputa, and which is believed to be the cause of the disease. He recommends the quinine to be given in powder mixed up in syrup.

FOR THE EYES.

Eye Inflammation.—Give the eyes perfect rest, use a wet cold bandage to the back of the neck, from ear to ear, every night, thus a clean small towel, or handkerchief, wrung out of clean cold water, laid close to the neck, and a larger dry one laid over it, and closely fastened under the collar band, so as to keep *in* the moisture and keep *out* the air. In the morning sponge the neck with tepid water and rub dry, then rinse the bandage cloths and let them dry for next night. Bathe the eyes three or four times a day in tepid water with or without a little skimmed milk in it. Do not read, or go into a strong sunlight until they both cease to give pain.—*English Mechanic*, *Vol.* xxxi., p. 311.

Longsightedness. — In persons of unusually longsight, the effort of the accommodating muscles in near vision breaks down the sight after a short time. If this be so, spectacles are the remedy,* and in most individuals these would be necessary after 45 years of age, no matter how perfect the eyes might have been. The eyes may be roughly tested by trying the nearest and the farthest point of possible vision of exceedingly small print, the mean between these two points ought to be about 14 inches; if much more, spectacles are needed. The continual use of one eye with the microscope or telescope renders the eye slightly colour-blind, shade of colour which can be seen with one eye to the other appear of darker hue.—(An Eye Surgeon.)—*Ibid.*

Granulation of the Eyelids.—Granula conjunctiva is very troublesome to cure in delicate subjects. Rest, open air exercise, good diet, and applications to inside of eyelids, are the only treatment. The accomodative condition of the eye should be looked to, for if this be seriously faulty, treatment will not avail.—*Ibid.*

A New Eye Salve for Granulations. — Dr. Williams, of Cork, after long experience in cases of granular eyelids, and all cases of chronic ophthalmia, recommends the following:—Sulphuret of arsenic 2 grs., citron ointment 2 drs., lard 6 drs. Mix. In cases of "granular lids" the upper eyelid should be everted, and a piece of ointment the size of a hemp-seed applied.

Lotion for Styes on the Eyelids. — Muriate of morphia 2 grs., sulphate of zinc 5 grs., camphor water 2 ozs., wine of opium ½ drm., chloric ether ½ drm. Dissolve and apply cold.

FOR SEA-SICKNESS.

As a Preventative. — Take of ext. cinnabis ind. 2 grs., pure chloroform 1 drm. For adults 5 drops on a lump of sugar on embarking, and repeated in two or three hours if required. For children one or two drops.—W. Lee, Castle Northwich, in *Pharm. Journ.*

Dr. Cory, says the *Lancet*, lately surgeon on a passenger steamer, recommends in *mal de mer* a combination of small doses of bromide of potassium and hydrate of chloral* taken with citrate of magnesia during effervesence. Spirit of sulphuric ether may be added when there is much depression.

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* See "Spectacles," Pharmaceutical and Miscellaneous Wrinkles.

In the *British Medical Journal*, a physician gives an account of a successful trial upon himself of $\frac{1}{100}$ of a grain of nitro-glycerine for the relief of sea-sickness. Two lads who were similarly suffering experienced relief from $\frac{1}{300}$ of a grain each.

Pepsine in Sea-Sickness.—*Industre Blatter* says, pepsine has been employed with the best results, but only in the case of those who have not been to sea before (!) As soon as premonitory symptoms appear, as much as would go on the point of a knife should be taken with a glass of water containing 5 drops of muriatic acid before and after meals.

FOR THE TEETH—TIC, TOOTHACHE, AND NEURALGIA.

The following are the directions issued by the Medical Committee of the *National Dental Hospital:*—

1. The teeth should be cleaned at least once a day, the best time being night—last thing. For this purpose use a soft brush, on which take a little soap, and then some prepared chalk, brushing up and down and across. There is rarely any objection to the friction causing the gums to bleed slightly.

2. Avoid all rough usage of the teeth, such as cracking nuts, biting threads, &c., as by so doing even good, sound teeth may be injured.

3. When decay is first observed, advice should at once be sought. It is the stopping in a small hole that is of the greatest service, though not unfrequently a large filling preserves the tooth for years.

4. It is of the greatest importance that children from four years and upwards should have their teeth frequently examined by the dental surgeons, to see that the first set,

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* See "Chloral Hydrate in Sea-Sickness," page 207.

particularly the back teeth, are not decaying too early, and to have the opportunity of timely treatment for the regulation and preservation of the second set.

5. Children should be taught to *rinse* the mouth night and morning, and to begin the use of tooth brush early (likewise the tooth-pick).

6. With regard to the food of children, to those old enough, whole meal bread, porridge, and milk should be given. This is much more wholesome and substantial food than white bread.

7. If the foregoing instructions were carried out, comparatively few teeth would have to be extracted.

8. Those who do not seek nor receive hospital aid are recommended to consult qualified practitioners, and not persons who advertise by show cases, puffing advertisements, &c.

Strengthening Wash for the Teeth and Gums.—Take the juice of one lemon, a tablespoonful of very rough claret or port wine, 10 grs. sulphate of quinine, a dessertspoonful of genuine eau de Cologne. Mix. Keep in stoppered phial. Brush the teeth with a moderate hard brush, with a few drops of the wash, and rinse the mouth well with lukewarm water.—*Dr. Kitchener's Oracle of Health.*

Dr. Manson's Cure for Toothache.—Collodion flexile 1 drm., Calvert's best carbolic acid 3 drms. Mix. The result is a gelatinous precipitate, a small portion of which is applied on cotton wool to the nerve. It is highly caustic, and must be kept off the cheek.

Mr. C. A. Guild, in *The Clinic*, says equal parts of collodion and carbolic acid will form a stiff jelly.

Chinese Remedy for Toothache.—Nitrate of potas. 1 dr., camphor 6 grs., orpiment 6 grs., sulphate of soda 30 grs. Grind the whole to a powder. A small portion to be placed in the cavity or rubbed on the region of the aching tooth.

Antiseptic Tooth Wash.—Liq. potass 6 drms. liq. chlorinate of soda 4 drms., spt. of camphor 4 drms., tinct. of myrrh 14 ozs. Mix. A few drops to be added to a glass of water to brush the teeth and rinse the mouth and gums.—*The Pharmacist.*

Good Filling for Teeth.—This is said to be next to gold in permanency. Oxide of zinc (recently made by burning) 200 pts., powdered silica 8 pts., powdered borate of soda 4 pts., glass 5 pts. Mix, and pass through a very fine sieve. To be kept in well stoppered bottles. *Use* : A little of this powder is mixed quickly with a concentrated solution of chloride of zinc, so as to form a thick paste, which is pressed into the cavity of the tooth, and will harden in less than ten minutes. It makes a hard white cement, which will last for years.

Tooth Paste.—This is said to retain its consistency and depurative qualities unimpaired for any length of time, and in any climate. When potting, it should be covered with tin-foil, parchment, paper, or oleine tissue. Cretæ precip. 16 ozs., p. irid. 4 ozs., p. oss. sepiæ 1 oz., mag. carb. 2 ozs., moschi 4 grs., ess. bergam. 2 drs., ol. cinnam. ver. 10 drops, cochineal 2 dms., syrupi simplicis q.s. Make into paste.—NOTES AND QUERIES, *Pharm. Journ.*

Action of Acids, &c., upon the Teeth.—M. Maurel finds that citric acid attacks and renders soft and friable all the dental structure. Tannic acid does not act on the enamel, but renders the dentine softer, and colours it light brown. Carbolic acid does not affect the enamel. Tinct. of iodine causes the enamel to disintegrate; while chloride of zinc has no effect on the enamel, but renders it transparent, though it has but little effect upon the dentine. Arsenious acid is without effect on either the enamel, cement, or dentine.—THE MONTH, *Pharm. Journ.*, 28/10/78.

Pain Stopping for Teeth.—M. Magilot recommends chloroform 5, laudanum 2, tinct. benzoin 10 parts; cotton wool, saturated, to be inserted in the cavity, and renewed until insensibility of the nerve is produced.—*Revue Med.*

Miahle's Dentifrice and Mouth Wash.—Sugar of milk 1,000, lake 10, pure tannin 15 pts.; oil of mint, oil of aniseed, and oil of orange flower q.s. Rub well the lake and tannin, and gradually add the sugar of milk, previously powdered and sifted, and lastly the essential oils. Habitual employment of the above will preserve the gums and teeth in a healthy state. It is recommended, especially when the teeth have been blackened by chalybeate drinks.

For excessive relaxation and sponginess of the gums Miahle recommends the following astringent wash:—Alcohol 1000, kino 100, rhatany root 100, tinct. of tolu 2, tinct. of benzoin 2, oil of canella 2, oil of peppermint 2, oil of aniseed 1 pt. The kino and the rhatany are to be macerated in the alcohol for seven or eight days, and after filtration the other articles are to be added.

A teaspoonful of this preparation, mixed in half a goblet of water, should be used to rinse the mouth after the use of the tooth powder.

Toothache may be cured by causing a current of electricity to be ingeniously applied to the seat of pain.

Creosote for toothache should be pure wood creosote, not that obtained from coal-tar, which is very likely to act as an irritant.

Wool used for tooth stopping with solution of mastic (white hard varnish answers admirably) should be deprived of its greasy character, hence the pink wool which has been cleansed before dyeing is best for use.

The following are recommended in place of creosote:—(1) Saturated sol. carbolic acid, saturated sol. chloral hydrate, Fleming's tinct. aconite, of each 1 oz.; spt. camph., tinct. opium, ol. peppermint, of each ½ oz. Mix. (2) Chloral hyd. 1 dr. solve in water ½ oz., tinct. aconite (Fleming's) 15 dps., chloroform, spt. sulph., ether, of each ½ dr. (3) Sedative of opium, oil of cloves, of each 2 oz.; camphor 1½ dr. This latter is very efficacious.

Morphia Collodion.—The *Union Medicale* recommends this as an application for neuralgia. It is made in proportion of 1 part of hydrochlorate of morphia to 30 parts of flexible collodion, and is applied by means of a camel's hair brush.

Anti-Neuralgic Ointment.—Aqua ext. belladon 14, ext. opium 2, lard 14 grams. Mix. Rub the part affected with a piece the size of a hazel nut. The friction should be continued for eight or ten minutes, or until the grease is completely absorbed.—*Journ. de Pharm.*

Liniment of Aconite B. P. has effected surprising cures in most obstinate cases.—*Practitioner.*

Tic and Neuralgic Pills.—A safe remedy, under the name of "Meglin's Pills," has been long popular in Germany, and is made as follows :—Ext. of hyoscyam. zinc oxide, of each 40 grs. Mix, and make into 40 pills. *Treatment:* Commence with one pill night and morning. May be increased up to 20 or 30 daily. It is always desirable to commence treatment with a gentle purgative dose.

Aromatic, Tonic and Vulnerary Essence for Neuralgia and Rheumatism.—Take of bay berries (*Baies de laurier*) 15 grms., arnica flowers 25 grms., lavender flowers 10 grms., camomile flowers 10 grms., leaves and young tops of thyme, peppermint, garden balm (*Milisse*), and sage, of each 10 grms. ; French brandy 1 pint. Macerate 15 days ; express and filter. Use externally in neuralgia, rheumatism, &c., &c.—*Report de Pharmacie.*

Menthol in Neuralgia.—This is insoluble in water, but dissolves readily in alcohol, ether, or glycerine. To relieve neuralgia paint the painful part with a solution of the strength of one grain to 10 min. of alcohol.—*New York Med. Journ.*

Mixture for Neuralgia.—Dr. Laudesberg (*Med. and Surg. Report*) extols the virtues of the following mixture :—Aconitia 0·016, glycerine 4·0, alcoholis 4·0, aqua menth. 60·0. Mix. *Dose:* 1 dr. three times a day.

Treatment of Neuralgia.—Dr. R. G. Alexander, of Bradford, suggests the following :—Neuralgia is frequently mistaken for rheumatism, gout, spinal irritation, &c., and *vice versâ.* The following are some of the leading features of a typical case of neuralgia :—1. It occurs when general debility exists, is increased by fatigue—mental or bodily, but relieved by food and stimulants. 2. The pain, which is sudden, darting and excruciating, exhibits remarkable intermissions. 3. It is usually unilateral. 4. As the disease advances, tender spots are formed in the course of the affected nerves.

Treatment.—In every case improve the general health by very nourishing food, well masticated. Stimulants should be given, if required, with the food. Pure air *night* and day, great cleanliness, and the use of sponging with sea salt and water. Cod liver oil and cream given after meals. Quinine in facial neuralgia, and also chloride of ammonium. Arsenic in cases of *angina pectoris.* Iron and strychnine in anæmic states. Bromide of potassium is useful in mild cases, where the pain is not severe. The subcutaneous injection of morphia, beginning with ⅛th of grain is the most speedy and useful remedy we have, and is a curative agent, for it checks at once pain, and gives the opportunity of carrying out constitutional measures. In chronic cases of neuralgia a blister, not necessarily carried to the point of vesication, is often of the greatest possible service, and it is a treatment peculiarly adapted to old standing intractable cases.—*Lancet.*

FOR INDIGESTION, &c.

Pepsine taken without muriatic acid is only half as efficacious as pepsine with the acid ; the pepsine of commerce always requires muriatic acid to set free the digestive principle.

Pepsine dissolved in citrate of ammonia is the mildest form in which it can be dispensed, and, if found to be as efficacious as when dissolved in muriatic acid, would be a more pleasant preparation ; and it is a stable preparation. With some aromatics, spirit and syrup forms a very agreeable elixir to be kept in stock.

Pills for Dyspepsia.—Diastase 10, pepsine 50, ext. gent. 50, tartaric acid 50, powd. rhubarb 50 grs., gentian q.s. Divide into 3 gr. pills. *Dose:* Two or three pills during or shortly before meals.

FOR ITCH.

In the Catherine Hospital of Stuttgart patients receive first a warm bath, after which they are anointed three times during the first day with a mixture of equal parts of petroleum, liquid storax and alcohol. Afterwards they are again given a bath and dismissed. Only in rare cases was a fourth immersion necessary. The effect upon the skin is apparently quite insignificant. Compared with the treatment by green soap, the above method saves time, labour, and money, and is much less disagreeable to the patient.—*Pharm. Zeitschr. f. Russland.*

Itch Ointments.—Useful when it is desirable to conceal the nature of the disorder from the patient:—Sabadillæ pulv. 3 oz., adip. præp. 16 oz., ol. lavand. 3 fl. dr.

Styracis præp. 1 dr., olei olivæ 2 drs. Make into an ointment, to be rubbed in morning and evening.—*C. & D. Diary.*

Indian Remedy for Inveterate Itch.— Finely powdered cocculus indicus, mixed with a little warm castor oil.—*Ibid.*

Oil of bergamotte is said to be a specific for the itch. Rhyme and reason both suggest that experiments should be made first on the rich.—*Ibid.*

Specific for Itch.—Pigmentum sulphuris (King's College Hospital).—Sulphur precip., pot. carb., glycerine, spt. of wine, of each 1 oz.; m.

Golden Fluid for Itch.—This is probably the preparation in common use in Austria under the name of solutio calcii oxysulphurati and solutio vleminekx, and is made thus:—Calcii oxysulphurati 50, sensim. immissa in aquæ bullientis. Inter assiduam agitationem coquantur ad colaturæ 200·0. Serva in lagena optime clausa.—HAGER *in C. & D.*

Chaulmoogra Oil, Dr. D. Young, of Florence, remarks (*Pharm. Journ.*), has a deserved reputation in cases of itch and parasitic pediculi, and forms a valuable addition to the ordinary sulphur ointment.

Naphtol Ointment.—Prof. Kaposi, of Vienna, reports the successful treatment of 106 cases of skin diseases of very various characters from this preparation. In cases of scabies (itch) he prescribes as follows:—Naphtoli 15, adeps 100, sapon. virid. 50, cret. alb. 10 parts. To be applied twice a day.

Naphtol ($C_{10}H_8O$) is a dark violet-brown crystalline mass which breaks easily into powder. It has a weak, phenol-like but sweetish odour. Dissolves with difficulty in water, easily in diluted spirit, but freely in fixed oils and fats. Care must be taken not to use it too strong.—*C. & D.*

Chaulmugra oil has a deserved reputation in cases of itch and parasitic pediculi, and forms a valuable addition to the ordinary sulphur ointment.—CHRISTY'S *New Commercial Drugs, &c.*

FOR RINGWORM.

Iodine and Oil of Tar.—A mixture of 1 pt. of iodine with 4 of light oil of wood tar makes a useful application. In mixing the iodine and oil great heat is evolved—part of the oil is oxidised and becomes resinous. This resinous portion, being held in solution in the excess of oil, on applying the mixture to the affected part, acts like a varnish, and prevents the vaporization of the iodine.

Glycerinum Acidi Carbolici Mitius (King's College Hospital).—A capital remedy—acid carbol. 1 drm., glycerine 1 oz. Mix.

Thymol for Ringworm.—Dr. Malcolm Morris recommends the following:—Thymol ½ drm. (less if the skin is irritable), chloroform 2 drms., olive oil 6 drms. This kills the fungus in the hair follicles.—*Drug Circular.*

Tong-Pang-Chong (*Rinacanthus communis*).—This is an Indian remedy for ringworm in the form of tincture of the fibrous root. Dr. Liborius obtained from the root a quinine-like body, supposed to be the active principle resembling chrysophanic and frangulic acids in its antiseptic and anti-parasitic properties, which he called rhinocanthin: (see *Ph. J.*, 26/3/81). According to Dymock the leaves are bruised and mixed with lime juice, and are known in India as a popular remedy for ringworm. A fluid extract is prepared from the fresh root. This, and mcst of the new remedies, can be obtained from Christy & Co., 155, Fenchurch Street.

FOR EARACHE.

Earache is acute inflammation of the membrane tympani, which may be quickly subdued, the patient relieved, and probably saved from subsequent confirmed deafness by a treatment similar to that which will be found beneficial in analogous cases of eye disease, viz., leeches behind the ear, hydrarg. cum cretâ and belladonna powders, with warm fomentation.—PROF. WHARTON JONES, F.R.C.S., &c., in *Lancet.*

Two or three drops of tinct. of digitalis inserted into the ear, and then insert a plug of cotton.

In numerous cases of earache, the vapour of chloroform has been used with perfect success. Take a common tobacco-pipe, place a wad of cotton in the bowl, then drop eight or ten drops of chloroform upon it, and cover with another wad of cotton; place the stem to the affected ear, then blow into the bowl; the chloroform vapour is carried into the ear, and the pain almost instantly ceases.—*Journ. of Materia Medica.*

Acoustic Balsam for Deafness.—Garlic infused in oil of almonds, and coloured by alkanet root.

Another Remedy for Deafness.—Two drs. camphor dissolved in 1 oz. sp. terebinth.—*C. & D.*

FOR THE SKIN.

All who suffer from skin irritation or eruption should abstain from the use of two much animal food, or indulge freely in goose, duck, or pork, should eat a due proportion of green vegetables, as well as potatoes, and not use beer or spirit with meals; if a stimulant should be needed, claret should be taken, and it need not be the most expensive. If this disagrees, tarragona may be tried.

Many troubles of the skin are caused by *debility*, particularly debility of digestion; this, after common sense hygienic management, may be often set right by means of the bitter tonics taken with some of the mineral acids; tinct. of steel will also do good; and if these fail, the following may be tried:—Take of Fowler's solution of arsenic ½ oz., wine of iron 3 ozs., syr. of orange ½ oz., distilled water 4 ozs. *Dose:* For an adult 25 to 30 drops in water, with or after meals, gradually increasing to 60 drops. This mixture should be discontinued after a week or ten days, and repeated again after an interval of one week, if required.

Where actual eruption or pimples on the skin exist, about a grain of corrosive sublimate, dissolved in 1 oz. of eau de Cologne, may be applied twice a day. Juniper tar soap should be used, and an occasional application of benzoated zinc ointment at night, to be washed off in the morning, the water used being cold. Should the eruption prove obstinate, 10 grains of the iodide of sulphur added to each ounce of the ointment will often prove effectual.

The skin is so important an eminctory, that even the impartial performance of its functions is incompatible with healthful existence.—Dr. ERASMUS WILSON.

Boracic Acid in Skin Diseases.—Prof. Neumann advocates the use of this preparation in diseases of the skin. He prescribes an aqueous solution in parasitic diseases; an alcoholic solution in itching consequent upon urticaria and pruritus; the ointment in all forms of eczema. Combined treatment with soap wash and tar is necessary in infiltrated eczema. Aqueous and alcoholic solutions are applied with a sponge or brush, or the remedy is dusted over as a powder. In pityriasis and herpes tonsurans, solution of 10 to 20 pts. in 300 pts. with the addition of 2·5—3·0 pts. of oil of cloves, or an infusion of cloves may be added to the alcoholic solution. In eczema a salve of 10 in 50 parts.—*New Remedies.*

To Remove Freckles and Tan.—Dr. Nevins Hyde endorses the following formula of Prof. White:—Hyd. bichlor. 6 grs., acid mur. dil. 1 drm., aqua 4 ozs., alcohol 2 ozs., aq. rosæ 2 ozs., glycerin 1 oz. Mix. Apply at night and wash off with soap in the morning.

For Chapped Hands.—Acid carbolic 15 grs., yoke of an egg, glycerin 3 drms.—Dr. WILSON.

Salicylic Acid Ointment is a favourite remedy for scurf in the head, dandriff, ringworm, scald head, and other complaints of the skin having a parasitic origin.

Selenite in Violet Powder.—Prof. Redwood observes on this subject (*Ph. J.*, 5/10/78):—"Selenite, notwithstanding the angularity of its particles, is, to my knowledge, in cases of moist, inflamed, or chafed skin, a valuable application by which irritation is speedily allayed, and a slight astringent action produced, which is very beneficial. The perfect neutrality and slight solubility of the selenite probably contribute to the result. When or how this substance came to be added to, or substituted for starch in violet powder, I know not, nor does it appear to me to signify much whether the mountain came to Mahommed or Mahommed to the mountain, if the prophet has fulfilled his mission and is believed."

FOR SORE NIPPLES, &c.

Treatment of Sore Nipples.—The following instructions appeared in the *British Medical Journal* from Dr. Munro, of Bradford:—During the last month or so of pregnancy wash the nipples with equal parts of brandy and water morning and evening, and if there be any cracks apply a lotion of sulphurous acid, about 1 to 8 on lint. Proved. Mr. Wills, of Chester, says:—Bathe the nipples twice or three times daily previous to confinement with a lotion of tincture of arnica and water (1 to 7), and take care that there be no pressure from the corsets or dress, and there will be no sore nipples afterwards. During lactation a lotion of brandy and water (1 to 8) may be applied to the nipples between the infant's feeding hours, taking care to bathe them with warm water immediately before the child is put to the breast.

Good Ointment for Sore Nipples and Cracked Lips.—Prepared beef marrow ½ lb., spermaceti ½ lb., oil of almonds 5 ozs. Coloured with alkanet root. When cooling incorporate ½ oz. of balsam of tolu.

FOR CORNS, WARTS, &c.

Corns.—Take of iodide of potassium and iodine equal parts, and dissolve in a small quantity of water. Apply with a brush to the corn every night, being careful not to touch the surrounding skin.

Dr. Craig, of Montreal, recommends a 20 gr. solution of chloral as a painless and effectual application to warts.

Wart Destroyers.—Nitrate of silver 1 drm., dissolve in nit. mur. acid 1 oz., chromic acid, ammonium chloride, glacial acetic acid, a strong solution of black soap. Either of these preparations applied with a brush night and morning.—*The Pharmacist.*

Corn Solvents.—(No. 1) Solution potass. 1 drm., tinct. iodine 1 drm., glycerin 4 drms., water q.s. to make 1 oz.—*Drug Circular.*

(No. 2).—Salicylic acid 30 pts., ext. cannabis indica 5 pts., collodion 240 pts. To be applied with a camel's hair pencil.—*Pharm. Zeit.*

Dichloracetic Acid is said to be the best caustic for the removal of warts; one application is commonly effectual. The acid should be carefully put on with the sharp point of a glass rod.

Papaw Juice.—Dr. Malcolm Morris has found this drug very useful for softening hard corns, and in cases of warts and psoriasis.—CHRISTY'S *Commercial Plants and Drugs.*

FOR TAPEWORM.

Pepsine for Tapeworm.—Three grs. of pepsine were given to a child during five days with the best results. As pepsine may be considered the most harmless and least disagreeable of all preparations used against tapeworm, the probabilities are that hereafter first of all remedies against tapeworm, pepsine will be tried. It appears to act by dissolving the worm.—*Drug Circular.*

Areca Nut, when swallowed in doses of ½ oz. in powder, acts as a poison to tapeworm.—*Whitla's Pharmacy.*

Papaw Juice.—"This new plant," says T. Christy, in *Commercial Plants and Drugs*, "has attracted considerable attention both in this country and on the continent." Dr. Bouchat (*Arch. Gen. de Med.*) has found that both the diluted juice and papaine have the property of digesting living tissues, normal or pathological, such as adenomata and cancers, and converting them into peptone in exactly the same way as dead ones.

It seems probable that this knowledge may be turned to account in the treatment of cancer and other abnormal growths. The false membrane of croup and diphtheria removed by tracheotomy, and also worms—such as tape-worm and round worms, are attacked and digested in a few hours by the papaw juice. M. Wurtz states the papaine can digest 1,000 times its weight of moist fibrine, of which the greater part is transformed by its action into a peptone.

SUGGESTED IMPROVEMENTS IN OFFICIAL PREPARATIONS.

Compound Ointment of Mercury.—Mr. Gerrard (of University College Hospital) says:—The *Pharmacopœia* instructions for making this ointment in small quantities might be practicable, but they were not practicable for making the quantity ordered in the *Pharmacopœia.* In dealing with a large quantity of camphor (say 4 or 6 ozs.) it was difficult to get it in a state of powder sufficiently fine to make a smooth ointment, and the only way of getting over it was to melt the wax and oil together, then put in the ointment of mercury and stir well; and when the mixture was getting cold, or towards a solid state to put in the powdered camphor, and, by stirring it, they would get an ointment perfectly smooth and consistent.

On Hemlock Poultice.—Mr. Gerrard says:—In the *Pharmacopœia* it was ordered to be made with dry powdered leaf; but would it not be better to use extract for this preparation? because they knew very well that in the experience of eminent men the dry leaf of hemlock was found to contain scarcely any active principle. He had heard the opinion of several medical men upon this point, and he found the extract answer better.

Tincture of Orange Peel.—Mr. W. Martindale (*Ph. J.*) observes:—This is directed to be made by macerating *dried* bitter orange peel in proof-spirit. No housewife thinks of preparing marmalade from dried orange peel, nor should pharmacists be directed to prepare a tincture from it, seeing that at certain seasons of the year Seville oranges can be had readily. The fresh peel yields a tincture which, when diluted with water, still remains clear, whereas the present tincture becomes milky in consequence of some of the aromatic principles having become resinous. If made with fresh peel, rectified spirit should be used, with about double proportion of peel cut thin; the juice contained in the peel will bring the tincture down to about the same strength of spirit as the B.P. tincture. Mr. Carteighe remarked that he had made the fresh peel tincture with all the assurance of certain medical men at his back, that it was considered immeasurably superior to the official form, but, unfortunately, the British public preferred the tincture made from the dried peel.

Syrupus Aurantii (J. Young, *Ph. J.*, 2nd series, vol. ii., p. 720).—This syrup is not nearly so delicious as it may be. The delicate flavour of the orange seems quite overpowered by the spirits of wine in the tincture. The following process, which consists in using a tincture double the ordinary strength, yields a syrup nicer every way than that of the B.P. The extra cost of the "Peel" is more than defrayed by the reduction in the strength of the spirit, this being sp. gr. 0·935, or 13 per cent. "under proof," and quite strong enough to prevent the slightest change by fermentation:—Tinctura aurantii fortior—bitter orange-peel, cut small and bruised 4 ozs., rectified spirit 11 fluid ozs., distilled water 11½ fluid ozs. Mix, and macerate for seven days, strain, press, and filter. The product should measure 1 pint, which, when mixed with syrup in the B.P. proportion of 1 volume to 7, will yield a gallon of syrupus aurantii, much superior to that prepared in the usual way.

Lemon Tinct. for Ærated Waters. — Choose lemons of bright thick skins, as green as possible, providing the fruit be sound and well developed. Peel them without any white. The peel from 1 doz. lemons will weigh about 9 ozs. Add the peel of 6 doz. to a gallon of spt. vin. rect. 16° o.p., which may be made by diluting three quarts of 55° o.p. spirit, with water q.s. to make one gal. *when cold.* Macerate for three days with occasional agitation, and allow to clarify by settling. — (Barratt, Son & Co.'s Pamphlet).—*C. & D.*

Tinct. Kino.—The following is suggested by J. B. Moore, of Phil., Pa., in place of the U.S.P. preparation. Kino is readily and quickly deprived of all soluble matter by simple trituration with hot water and alcohol. I have for several years adopted this formula, which I think affords a much better preparation than the officinal one:—Powd. kino No. 80 1½ ozs., trag., stronger alcohol q.s., glycerine 4 ozs., boiling water 8 ozs., water q.s. Rub the kino in a mortar with the boiling water, gradually added, until a smooth and uniform mixture is obtained. To the mixture add 4 ozs. of stronger alcohol. Mix well, and strain through muslin. Then transfer the muslin strainer containing the residuum to a glass funnel, and wash the residuum with a mixture consisting of 1 pt. alcohol, 2 pts. water, until sufficient liquid has passed to make, with the strained liquid, 12 ozs., and to the product add the glycerine, and mix well. After standing a few days, decant.—*Drug Circular.*

Tinct. Opii Camph. (*Improved formula*).—J. B. Moore, in *Drug Circular:*—P. opium (m. 5) ½ oz. troy, benzoic acid ½ oz. troy, camph. 160 grs., ol. anise 4 drs., clarified honey 8 ozs., boiling water 70 ozs., strong alcohol 58 ozs., aqua q.s. Pour the boiling water on the opium, digest the mixture with frequent stirring for half an hour at from 170° to 190° F. Transfer the mixture to a suitable bottle, add to it the alcohol, shake together, and add sufficient water to make up 8 pints. Dissolve the camphor in the oil anise in a mortar, add the benzoic acid, and rub well together; to this gradually add the honey, and triturate thoroughly until a smooth mixture is formed; lastly, add the mixture to the 8 pints of menstruum, shake vigorously and filter through paper.

If it be desired to avoid in the tincture the objectionable principles of opium taken up by alcohol after digestion, strain while hot through muslin with strong expression, rub the residuum with a spatula to a smooth mass, and pack in a glass funnel percolator, and gradually pour upon it one pint of the strained liquid, and when it has all passed the surface, continue the percolation with water until one pint of percolate is obtained. Add this to the remainder of the strained liquid; add sufficient water to make it measure 70 ozs. To this add the alcohol, and mix well. Then proceed to mix the remainder of ingredients in a mortar, as directed above.

Mist. Gentianæ Comp. Conc.—Bruised coriander seed, bitter orange peel, of each 240 grains, pour on proof spirit 16 ozs., gentian root very thinly sliced (or better in coarse powder) 2 ozs. Pour on this distilled water, rather more than sufficient to cover it, allow to stand one hour; pour off the liquid, and repeat the process to the third or fourth time, when less than a pint of fluid will be obtained, and the exhaustion will be completed; evaporate to four fluid ounces, and mix with the tincture, previously strained from the coriander seed and orange peel. The mucilage is precipitated by the spirit, and by filtration a bright concentrated liquid is produced, which keeps as well as the tincture. One part to three of distilled water forms the mist. gentianæ comp.—(C. SYMES, Ph.D.)—*Pharm. Journ.*

Aromatic Syrup, American (D. M. A., Newark, N. J.).—Tinct. of fresh orange peel (1—10) 4 drms., ol. Ceylon cinnam. 1 m., ext. vanil. 1 drm., sugar granulated 12 ozs., water q.s. Dissolve the ess. oil in the tinct., mix in the ext. vanil., and rub the whole with 3 or 4 drms. of phosphate of lime. Gradually add about 6 ozs. of water, and transfer the mixture to a bottle, macerate 24 hours, agitate occasionally, run through a wet filter, and add, through the filter, enough water to complete 7 ozs. In this dissolve the sugar without heat, and strain.—*Drug Circular.*

Soft Extract of Liquorice.—The P.L. preparation is apt to become mouldy, to ferment, and speedy to pass into a state which renders it unfit for use. The following process remedies this, and produces an extract which may be retained soft without becoming in the slightest degree mouldy, or undergoing fermentation. Take any quantity of solazzi juice in small fragments, upon which pour about eight times its weight of cold distilled water, macerate and frequently stir the mixture until the soluble portion of the liquorice has dissolved. This point will have been arrived at when there are no black fragments left, and the liquid forms a dark solution with a muddy brown powder, held more or less in suspension. Allow this powder to fall completely to the bottom of the vessel, and pour off the clear portion of the liquid, and evaporate to the consistence of a soft extract, which may be kept good and ready for use without any further treatment. The above is an exceedingly economical process, and yields a soft extract equivalent to the weight of the juice employed, if it be of good quality.—BASTICK'S *Annals of Pharmacy.*

Pil. Saponio Comp.—The proportion of opium in the compound pill of soap seems to have been unnecessarily altered from the customary 1 part in 5 to—"1 part in 6 nearly."

If there should not exist any objection against the use of potash soap, the following will be found an improvement on the official formula, since it not only yields a uniform mass, easy to roll, but, what is of more consequence, one of unvarying strength:—Opium in powder, liquorice root in fine powder, of each 2 ozs.; hard soap in powder 3½ ozs., soft soap 2½ ozs. Gradually beat the powders, previously mixed together, with the soft soap, until a uniform mass is obtained.—T. YOUNG, *Pharm. Journ.*, 2nd series, vol. ix., p. 719.

Pil. Phosphori B.P.—Messrs. Allen and Hanbury, say the "B.P. preparation seems unlikely to be generally used, and suggest the following, which they name *Pil. phosphor c. sapone:*—Phosph. 2 grs., carbon bisulphide 10 min., vel. q.s. solve, p. sapon. dur., p. guaiaci resin, āā 35 grs., glycer. 12 min., p. rad. glycyrrh. 12 grs., vel. q.s.; ut ft. mass gr. c. To be divided into pills of the strength required, varnished or coated in the ordinary way. The mass is of good consistence, easily manipulated, and readily soluble. A drop of oil of cloves added to the carbon. sulph., Mr. Proctor says, lessens the tendency to inflame.

Dr. Redwood says: The B.P. formula for *Pil. Phosph.* was intended to be administered with soap, and that this explanation should have been added to the formula.

Pulv. Sennæ Comp.—(To replace P. Glycyrrh. Co. Pr. P. and B.P.) Dr. E. T. Blackwell suggests—sennæ pulv., sulph. loti., sacch. albi, āā ½ oz.; fœniculi pulv., glycyrrh. pulv., āā 2 drs. It contains equal proportion of laxative and excipient.

No one will question, I think, says the doctor, the improvement in bringing the quantity of sulphur to equal that of the senna, which it so much surpasses as a laxative, nor does it prove less acceptable to the taste, while it is better tolerated by the stomach.—*Medical Times.*

B. P. Pill Masses.—Mr. J. C. Thresh, Buxton, says that,

Pil. Aloes et Assafœt. should have the amount of soap increased to 1½ oz., and the conserve decreased, when a good mass will result.

Pil. Aloes et Ferri could be made into a good keeping condition by making up powdered tragacanth and glycerine. The same remark also applies to pil. ferri carb.

The Pil. Col. Co., *Pil. Aloes et Myrrh*, and *Pil. Cambog. Co.*, were best made up with the tragacanth and glycerine excipient.

Syrup of Citric Acid.—(B. Lilliard, in *Amer. Journ. of Pharm.*)—Acid cit. 1 dr., water q.s., syrup 16 ozs., ol. limon. 30 m. Dissolve the acid in the water, add the syrup and ess. of lemon previously dissolved in a little alcohol; shake well until thoroughly mixed. This retains its brilliancy and flavour better than when prepared by the old formula.

Almond Emulsion Powder.—M. Chas. Meniére suggests the following for convenience in dispensing. Make an emulsion of almonds blanched 50 grains, and water, then add 300 grains of sugar in powder, and evaporate with a gentle heat to a pasty consistence. Spread it upon plates, dry thoroughly by artificial heat, and reduce it to powder, adding 5 grains of powdered tragacanth. To prepare the emulsion of the *Codex* take of this powder 32·5 parts, and triturate with orange flower water 10, common water 120 parts.—*Journ. de Pharm.*

SYRUPS OF THE PHOSPHATES.

Mr. M. Carteighe, in the *Ph. J.*, gives some new formulæ for the preparation of syrups of the phosphates. It is suggested that by using a stronger acid the syrup.

ferri phosph. is more readily made, and has been found to keep better than when prepared according to the B.P. process. The following formulæ are given:—

Syrup of Phosphate of Iron.—Phosphate of iron 96 grs., water 9 fl. drms., syrupy phosphoric acid (sp. gr. 1·500) 7 fl. drms., syrup 10 fl. ozs. Rub the phosphate of iron with the water in a glass mortar, add the phosphoric acid and filter the mixture into the syrup.

As thus prepared, it contains the same proportion of iron, about 2 minims less of the dilute acid (25 instead of 27), and rather more sugar than when prepared according to the *Pharmacopœia*.

The phosphate of iron is made by the B.P. process, and dried at a temperature not exceeding 100 deg. F. The specimens I have found in the ordinary course of trade are not readily soluble in the acid. This want of solubility is, I believe, due to the length of time they have been kept before sale.

I have obtained the best results with phosphate only a few days old, and find it advantageous to make as much as is required frequently.

Syrupy phosphoric acid of sp. gr. 1·500 may now be obtained of any manufacturing chemist, and, according to Dr. Watts's table, contains about 50 per cent. of P_2O_5. It is made by the action of nitric acid on phosphorus, the excess of acid being driven off in a platinum vessel.

Manganese is sometimes prescribed with or without iron, and according to Pereira, the former is a useful adjunct to ferruginous preparations, and occasionally a desirable substitute for them.

Syrup of Phosphate of Manganese may be prepared in a similar manner with the following ingredients:—Phosphate of manganese 96 grs., water 9 fl. drms., syrupy phosphoric acid (sp. gr. 1·500) 7 fl. drms., syrup 10 fl. ozs. Strength—1 grain phosphate of manganese and acid equal to about 25 minims of the dilute phosphoric acid in each fluid drachm.

[The phosphate of manganese is made in the same manner as the phosphate of iron, substituting sulphate of manganese for the ferrous sulphate.]

Syrup of Phosphate of Iron with Manganese.—Phosphate of iron 72 grs., phosphate of manganese 48 grs., water 8 fl. drms., syrupy phosphoric acid 8 fl. drms., syrup 10 fl. ozs. Rub the powders with the water, add the acid and filter into the syrup.

Each fluid drachm contains ¾-grain phosphate of iron, ½-grain phosphate of manganese and acid equal to about 30 minims of the dilute phosphoric acid, B.P.

Syrup of Phosphate of Iron and Lime.—Phosph. of iron 96 grs., phosph. of lime 192 grs., water 8 drs., syrupy phosphoric acid (sp. gr. 1·500) 8 drms., syrup 10 ozs. Mix the powders with the water in a glass mortar, add the acid, and filter into the syrup.

Each drachm contains 1 gr. of phosph. iron, 2 grs. phosph. of lime, and an amount of acid equal to about 30 m. of the dilute phosph. acid, B.P.

[The phosphate of lime is made by precipitation from solutions of chloride of calcium and phosphate of soda, and dried at 100 deg. F., and should not be kept too long before use. That made from bone ash, as the B.P. directs, is much less readily soluble.]

Syrup of Phosphate of Zinc.—Phosph. of zinc. 192 grs., water 13½ drs., syrup phosphoric acid (sp. gr. 1·500) 5 drs., syrup 10 ozs. Rub the phosphate with the water, add the acid and filter into the syrup. Each drm. contains 2 grs. of zinc phosph. and about 18 m. of dilute phosphoric acid.

Syrup of Phosphate of Quinia.—Phosphate of quinia 96 grs., water 11 drs., syr. phosph. acid (sp. gr. 1·500) 2½ drs., syrup 10 ozs. Mix the acid with the water, add the quinia and filter into the syrup.

Each drm. contains 1 gr. of phosphate of quinine and acid, equal to about 10 m. of the dilute phosphoric acid.

[In the absence of the phosphate, the same weight of quinia, prepared by precipitating an acidulated solution of the disulphate by solution of ammonia, collecting, washing and drying at 100 deg. F. may be used.]

Syrup of Phosphate of Iron with Quinine.—Phosph. of iron 192 grs., phosph. of quinia 96 grs., water 7 drs., syrupy phosph. acid (sp. gr. 1·500) 9 drs., syrup 10 ozs. Rub the powders with the water, add the acid, and filter into the syrup. Each dr. contains 2 grs. of phosphate of iron, and 1 gr. of phosphate of quinia.

Syrup of Phosphate of Iron, Quinine, and Strychnine (*Easton's Syrup*).—Phosphate of iron 192 grs., phosph. of quinia 96 grs., strychnia (in crystals) 3 grs., water 7 drs., syrup phosphoric acid (sp. gr. 1·500) 9 drs., syrup 10 ozs. Rub the phosphate of iron with 5 drs. of water in a glass mortar, dissolve the quinia and acid, previously mixed, with the remaining 2 drs. of water. Mix and filter into the syrup. Each dr. contains 2 grs. phosphate of iron, 1 gr. phosph. of quinine, and 1-32nd part of a gr. of strychnine.

Syrup of Phosphate of Iron and Strychnine may be prepared in the same manner as the last, omitting the phosphate of quinine.—*C. & D.*

Syr. Ferri Quiniæ et Strychniæ Phosphatum (Easton's).—The following is copied from a portion of a work lent by Dr. Aitkin (and I believe written by him) to a former employer of mine, in which he mentions the syrup as having been recommended by Mr. Easton to him for trial in his practice. Ferri sulph. 5 drs., soda phosph. 6 drs. (vel. 1 oz.) the former generally used; quin. sulph. 192 grs., acid sulph. dil. q.s., aqua ammon. fort q.s., strychniæ 6 grs., acid phosph. dil. 14 ozs., sacch. alb. 14 ozs. Dissolve the iron in 1 oz., and soda in 2 ozs. of boiling water. Mix and wash the precipitate till the washings are tasteless. With q.s. of diluted sulph. acid dissolve the quinine in 2 ozs. of water, precipitate the quinine with liq. ammon. fort., and wash carefully. Dissolve the phosphate of iron and quinine thus obtained, and also the strychnine in the dilute phosphoric acid; add the sugar and dissolve without heat. Product should measure 24 ozs.—(HENRY NEWMAN, London).—*Pharm. Journ.*

PHARMACEUTICAL AND MISCELLANEOUS WRINKLES.

Prescriptions.[*]—Once the prescription is in the hand of the dispenser he must give it his undivided and concentrated attention. Day dreaming must be for the moment laid aside, and in proportion to the thoroughness with which he isolates himself from everything but the sheet of paper before him, so will his success be.

Little confidence can be placed in the dispenser who will not take the trouble to wipe the scales before and after use, and place them away tidily.

Few things impress the patient so unfavourably as a cracked, dirty, or badly-fitted cork, or a soiled used label. The latter should be done with the most scrupulous neatness and distinctness.

Compounding and Dispensing.—The former applies to the mixing, blending, or preparing of the drugs ordered in a prescription, while the latter refers to the way in which they are put up, labelled, and sent out to the patient.

When salts like pot. iod., or roots like gentian, are ordered, with directions for their solution or infusion by the patient himself, their identity should be destroyed by the pestle, before sending them out.

Over-Confidence[†] is a fruitful source of mistakes in pharmacy, as it is in other departments, and the pharmacist must be cautioned against falling into the habit of working mechanically or automatically, so common amongst the absent-minded. Serious accidents have occurred by the automatic practice of taking a bottle from the shelf and pouring out its contents without looking at the label, believing that you have the right one from the fact of its always standing in that position. This is a dangerous practice.—(Condensed from *Whitla's Pharmacy*).

The laudanum bottle should be kept with the distilled waters, and light coloured articles at a distance from dark tincture, to prevent it being sold for tinct. rhei. co. All the more dangerous articles on a shelf requiring a short step or two to reach them, and the most active poisons under lock and key.—M.P.S.—*Phar. Jour.*

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[*] See "The Prescription Department," page 4.

[†] See "Errors in Prescription," page 5.

This remark will also apply to drugs having a resemblance to each other, and the endings of their names the same, such as quin*ine*, salac*ine*, strychn*ine*, morph*ine*. If the bottle is turned a little round, showing only the end of the word one way—and it has been done by a most careful dispenser in a lamentable case,—one bottle may be taken for the other. Obviously they should be kept apart.

Measuring.—In looking through a quantity of liquid in a glass, two lines or a double line may be noticed, the upper one being caused by the concave surface of the liquid, caused by capillary attraction. In the conical or larger measures the lower line, which is the true level, is the one to be taken into account in measuring; but in cylindrical minimum measure the liquid will be found to be *deeply* concave, owing to capillary attraction being stronger, here the true level would be midway between the highest point close to the glass, and the lowest in the centre.

Mixtures.*—When prussic acid, aconite, arsenic, corrosive sublimate, or any powerful drug be ordered, it should be put in the *last thing* before corking, unless there be some reason to the contrary. This habit would prevent the possibility of putting it in twice.

When magnesia is ordered, the water should be measured and the magnesia dropped on the surface without the use of the mortar, whilst the powder is sinking the other ingredients should be measured into the bottle, by which time the magnesia and water are ready to pour in on top of them. This completes the mixture, which will be whiter and more uniform than if rubbed in a mortar.

It is a mistaken notion that prussic acid floats on the surface of a mixture when allowed to rest. Such is not the case, but very volatile ingredients in a half filled bottle may rise in vapour and condense upon the inside of the empty part of the bottle, and on a dose being poured out would contain a relatively larger proportion of the volatile substance; hence, in these cases, a "shake the bottle" label should be put on.

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* See "Dispensing Difficulties," Mixtures, page 24.

Vaseline and cocoa butter make an excellent excipient* for pills, containing sulphate of iron and carbonate of potash. Confection of hip and *thick* mucilage for croton chloral. Sugar of milk and a little liquorice powder enables sulphide of calcium to be formed into a good mass with tragacanth paste. Acetate of potash may be made into a suitable pill with Canada balsam.

Instead of the usual label upon laudanum and other poisons used in dispensing, the word POISON should be printed in large Egyptian letters, with the proper Latin name in smaller capitals underneath on a bright green or red paper.

Green Extracts for pessaries, &c., should be rubbed first with $\frac{1}{5}$th part of the bulk of the whole of powdered Castile soap before incorporating with the bases—coccine. *Chloral Hydrate* can be made into a suppository by digesting it on a water-bath in cacao butter, in which it is soluble.

All repetitions should *invariably* be dispensed in fresh bottles or pots, and labels. Breach of this law is certain to soon get the dispenser into disrepute.

Fractional Distillation is the distilling of a mixture of substances volatile at different temperatures, whereby they may be separated and received into different vessels by regulating the temperature.

Cinchona Barks can readily be distinguished: the flat pieces of *yellow* bark by the absence of the epidermis; the *pale* by the presence of the lichens; and the dense, heavy *red* bark by its having the periderm present, being often warty, and crossed by transverse cracks. *Cascarilla Bark* resembles the pale variety, it is distinguished by the shortness and broken up state of its quills, which are much smaller and more brittle than those of pale cinchona, and they have an agreeable aromatic odour and warm taste.

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* See "Pills and their Excipients," page 55.

Sumbul Root is distinguished from calumba, which it slightly resembles by its open spongy texture and musty odour.

Senega Root, which is very like serpentary and valerian, is recognised by its keel or ridge, which is not marked on the smaller rootlets, which may be seen, like a little mesentery, at the bending of the roots, which are of a pure *white* colour internally.

Arnica Root is distinguished by its dark brown colour, aromatic odour, and peppery taste.

Hellebore by its thick root-stock, and closely set, long yellowish white rootlets, covered with characterestic indentations.

Cinnamon Bark may be distinguished from cassia bark, as the latter turns blue with tinct. of iodine, and the former brown, having less starch in it.

Aspirator.—The ordinary hypodermic syringe (commonly known as Wood's) can be used as an aspirator for all diagnostic purposes, in every respect equal to, and in many decidedly superior to, the most improved instruments. The piston must fit *perfectly*, and the cylinder should be partially filled with water, when the needle may be thrust into the tissues in search of the suspected pus. A few turns of the piston inject a harmless quantity of water which clears the needle, and allowes the puriform liquid to ascend on the motion being reversed; a single drop of pus is evident, as it wells up through the column of clear water. All superficial and most deep abscesses may be detected in this way, and pleural fluid can be easily demonstrated.

Inconsistencies.—A few incongruities occur in the B.P. with regard to the dosage. For example, the maximum *official* dose of Succus Conii is 1 dr., whilst the best authorities give ten times this amount habitually: the same may be said of Tinct. Digitalis and Hyoscyamus, and a few less important remedies.

The minimum dose of Morphia, Strychnia, and Tinct. of Aconite and Belladonna, are too large; and every day experience proves that the maximum dose of Tinct. and Ext. of Nux Vomica, if given, might cause unpleasant symptoms.

With these few exceptions, the official doses may be regarded as safe guides. There are many conditions, however, which modify very considerably the effect of remedies, and should materially effect their dosage: such as *Age*, *Idiosyncracy*, *Habit*, *Interval between doses*, *Disease*, *Climate*, *Race and Temperament*, *Form in which Medicines are given*, *Accumulation*.

Age is the most important factor in determining the amount of the dose, and most difficult: no reliable rule can be laid down. It should be remembered children bear opiates very badly, and their use is unsafe under one year old, even in most minute doses. Yet children will often bear nearly as full doses as adults of some remedies, as may be seen in the case of Arsenic, Calomel, Squill, Belladonna, Ipecacuanha, and many purgatives, like Rhubarb, Jalap, &c.

Young's rule is "That, for children under 12 years, the dose of most medicines must be diminished in the proportion of the age to the age increased by 12." For instance, if you wish to find out the dose for a given age, simply add 12 to the age in years, and divide the age by the amount thus obtained, the answer giving a fraction which is the required amount of the full adult dose. Therefore, suppose the adult dose be 1 gr., the dose will be—

For a child 1 year old, $\frac{1}{1+12} = \frac{1}{13}$ gr.
,, ,, 2 years ,, $\frac{2}{2+12} = \frac{1}{7}$,,
,, ,, 3 ,, ,, $\frac{3}{3+12} = \frac{1}{5}$,,
,, ,, 8 ,, ,, $\frac{8}{8+12} = \frac{2}{5}$,,
,, ,, 12 ,, ,, $\frac{12}{12+12} = \frac{1}{2}$,,

Idiosyncracy.—This condition of the system cannot be explained, but it frequently occurs. Cases are met with in which the smallest dose of calomel will produce salivation, whilst enormous doses of opium and chloroform are sometimes borne by those unaccustomed to their use.

Habit is particularly applicable to narcotics. Instances are recorded of opium eaters who took a pint of laudanum daily without effect; and the arsenic eaters of Syria are examples of the same.

Interval between doses should determine to a large extent the amount of the dose. The nature of the medicine, and effect required to be produced, and the rate of absorption, must be borne in mind.

Disease modifies considerably the dose of a medicine. Mercury and opium are badly borne in *albuminuria*, whilst to syphilitic children large quantities of grey powder can be freely given.

Climate, *Temperament*, *Sex*, *Stature*, *&c.*, have all to be considered in regulating the dose.

Method by which medicines are administered affects the dose. The dose given by the rectum should be twice as great as if given by the mouth, with the exception of strychnia, which is more active than if swallowed.

Accumulation in the system has been observed of digitalis, strychnia, bromide of potash, the physiological effects being suddenly produced, when, of course, the medicine must be diminished or suspended.

Incompatibilities* are said to be three-fold—*Chemical*, *Therapeutical*, *Pharmaceutical*, or *absolute*—as acetate of lead and sulphuric acid, strychnia and Calabar bean in pill form, and borax and mucilage.

Experience has shown some incompatibles to be valuable combinations: such as the official Mist. Ferri Co. and Mist. Ferri Aromat. It should be remembered, as a rule, *that a drug should never be ordered in combination with any of its Tests or Antidotes.*

The substances in the following list can be combined with so few preparations that it would be wise to order them alone in simple solutions:—*Permang. of Potash*, *Tannic and Gallic Acids*, *Corrosive Sublimate*, *Iodide of Potash*, *Salts of Lead*, *Zinc and Silver*, *Citrate of Iron and Quinia*, *Iodine and its liquid preparations*, *Sulphuric Acid*, *Tinct. of Guaiacum*, *Free Chlorine in solution.*

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* See "Incompatible Medicines," page 51.

Judicious Combination of Medicines.—Dr. Paris has pointed out the great advantage of this in increasing the action of drugs. Thus the virtues of bark are best obtained by the following:—Ext. cinchon. liq. 2 dr., tinct. cinchon. 1 fl. oz., decoct. cinch. 4 fl. oz., inf. cinch. ad. 10 fl. oz. Mix.

Fordyce shows a much more valuable and reliable remedy may be obtained by combining various diuretics, &c. Thus, a mixture of digitalis, squill, broom, and bicarbonate of potash, forms an infinitely superior mixture to a proportionate dose of any one of them when given singly.

By judicious combination we are often enabled to correct undesirable qualities, and intensify the desirable properties of drugs—thus, alkalies prevent the griping of aloes, and hyoscyamus that of colocynth; arsenic prevents the acne, which follows the administration of bromide of potash; and atropia corrects the unpleasant symptoms caused by hypodermic doses of morphia; and the diuretic power of digitalis and squill is intensified by mercury.

The preceding are condensed from WHITLA's *Pharmacy*, &c.

Cinchona *v.* Its Alkaloids.—Mr. L. Tait, F.R.C.S., Birmingham, after long experience with two hospitals and in private practice, was quite certain that he got results from a decoction of cinchona which were not obtainable from any of the alkaloids. In cases of ague quinine was as good as cinchona, and cinchona as good as quinine; but where a tonic is required, he was confident that quinine was not nearly equal to the decoction of cinchona.

Borax powdered with mucilage forms a soft powder like moist sugar, which cannot be dissolved by any addition of mucilage; and acetate of lead, similarly treated, makes an opaque white jelly.

Dispensing bottles for syrups should be carefully cleansed each time before re-filling. Filling syrup into half-pint bottles, keeping in a dark place, and taking them one at a time into the dispensary is a good plan; re-placing is better than re-filling, for when a new batch of syrup is added to a small quantity of old, there is a great chance of the whole being reduced to the standard of the old. Syrups, which are rarely used, as of roses and saffron, can be conveniently extemporised by making a concentrated solution of the drug, filtering it upon powdered lump sugar in an evaporating dish, reducing to dryness with constant stirring and powdering the residue. This powder will keep for years, and a clear syrup can readily be prepared by shaking it with the required quantity of water.—CHARLES SYMES, Ph.D.

Apiol.—The active principle of parsley, discovered by Taret and Homelle, in 1855, is an oleaginous amber-coloured liquid, soluble in water in any proportion of an acrid taste. It may be given in capsules. According to Marotte, of La Pitié, it brings on the menses, regulates menstruation, and calms the pains by which it is often accompanied. It has no action on the pregnant womb.

Cantharadine.—It is only the full grown insect that will raise blisters. Cantharadine appears not to be developed until the complete maturity of the fly. In purchasing cantharides, therefore, those only should be chosen which have attained their full growth.—*Zeitschrift für Chemic.*

Capsaicin.—M. Garrard states: Dr. Ringer had made trial of capsaicine in dose of $\frac{1}{25}$ of a grain, but it had such violent griping effect, accompanied with a purgative action, that its use as a remedy had been abandoned. Capsicum contains *capscicin* and *capsaicin*, besides a deep orange red oily liquid, isolated by J. C. Thresh, of Buxton. Capsicin is the oleo-resin used with common salt, and coloured with annatto in the preparation of "soluble cayenne pepper."

Preservation of Essential Oils.—Some perfumers adopt the plan of keeping the oil in tightly stoppered bottles, and fill up with water as any of the oil was removed. Samples of the same essential oils had been kept, one in the shop and the other in the cool cellar, in similar stoppered bottles; one was found spoiled, whilst the other had remained perfectly sweet. The action of gas was thought to be injurious to essential oils.

To Kill Red Fly.—W. W. Will, in *Pharm. Journ.*, says: "This, and other parasitical pests may be destroyed by first trimming the vine, and then thoroughly washing with a solution of pentasulphide of calcium. Against ants castor oil is found to be an entire protection."

A tinct. of nux vomica, prepared caustic solution of ammonia, is said to be a good insecticide. If horse's harness be painted with it, flies will not approach the horse.

White Shellac should be kept in the dark, or used as soon as possible after bleaching. It is very difficult to dissolve bleached shellac which has been exposed to the light. This is a trade secret.

In order to obviate the annoyance occasioned by the alteration which white shellac sooner or later undergoes, dissolve it as soon as it is received from the maker in methylated spirit, so that 1 oz. shall contain ½ oz. by weight. In this fluid form it is at once available for polishers, and should a little of the solid be required, it can readily be obtained by precipitation with hot water.

Hard and Soft Water.—The result of Dr. Tidy's experiment on the use of hard water for domestic use is thus summarised:—

(1) Hard water is best dietetically, because of the lime.

(2) It makes better tea, although not so dark coloured, owing to the fact that soft water dissolves the bitter extractive matters which colour the tea but ruin the aroma.

(3) It relieves thirst which soft water does not.

(4) It does not dissolve lead or organic matter, which soft water does.

(5) It is generally good coloured, soft water being as a rule dark coloured and unpleasant looking. Soft water, however, is a better detergent, and requires less soap.

Lead Water Pipes.—M. Belgrand, Préfect of the Seine, says in a pamphlet recently translated by Dr. W. S. Saunders, Medical Officer of Health, that "Distilled water in the presence of atmospheric oxygen is known to attack lead rapidly, but the presence of even a trace of lime salt, such as is frequently found in rain water, appears to stop this action entirely; a thin film of carbonate of lime is formed on the inside of the pipe, which prevents contact of the water with the lead."—*Pharm. Journ.*, 31/12/81.

Simple Test for Purity of Water.—Fill a clean pint bottle three-fourths full with the water to be tested; dissolve in the water half a teaspoonful of the purest sugar, loaf or granulated; cork the bottle and place it in a warm place for two days. If, in from 24 to 48 hours, the water becomes cloudy or milky it is unfit for domestic use. If it remains perfectly clear it is probably safe.

A quantity of scrap iron placed in water will most effectually remove organic matter, but the water must be subsequently passed through a bed of sand and gravel to separate the oxide of iron which is formed.

To Remove Acidity from Beer.—Coarsely powdered marble or limestone is the only unobjectionable remedy. The quantity to be used must depend upon the degree of sourness, but the acid present will dissolve no more than is sufficient to neutralize itself, and the remainder, being insoluble until fresh acid is generated, will have no effect on the flavour or qualities of the beer. The powdered limestone is, from its hardness, slowly acted on by the acid of the beer; as a solution takes place carbonic acid is given out in a small continuous stream, which keeps the liquid in a brisk, pleasant condition. Beer to which any kind of alkali has been added to neutralize acidity should be speedily used, as by further keeping it has a tendency to become flat. The addition of 2 or 3 lbs. of sugar to the hogshead is useful in restoring fulness and sprightliness to beer which has been alkalized for sourness.—*The Oracle.*

Pill Machines.—A. E. Ebert, in *Chicago Pharm.*, suggests that it would be a great improvement if pill machines were made to cut 30 instead of 24 pills, and had numerals placed before each groove, so that the operator would not have to count the grooves when a fractional number of pills are required.

Lipped Vials.—This is another suggestion from the same source. The difficulty of successfully dropping liquids from a bottle would be obviated if half, one and two oz. vials were generally made with lips. It would greatly facilitate the taking of medicines by drops, and be particularly useful to invalids and nurses.

Expeditious Pill Coating.—Have prepared a solution of 1 resin to 10 of ether. Place the pills, when rolled to shape, into a mortar, pour over them a little of the resinous solution, give the mortar a few twirls and roll them out upon the platform ; by the time the label is prepared the pills will have become sufficiently dry to allow boxing. A little lycopodium should be dusted over them, and the work is done.—*Pharm. Jour.*

Licorice Fluid Extract.—This, says Dr. E.T. Blackwell, *Medical Times*, masks so completely the cinchona salts as to render them acceptable to children, and other persons of fastidious taste. A very limited amount of acid only is allowable to facilitate the solution of the salt, as *any excess precipitates the glycyrrhizin.* Made carefully and lightly shaken, it forms a very good mixture. It is useful in a multitude of combinations, embracing solutions of morphia and chloral, as also diarrhœal and cough mixtures, tonics, &c.

Infusorial Earth is sold under almost any name but its own, according to its origin and appearance : dealers call it tripoli, rotten stone, electro-silicon, mountain meal, &c.

Indiarubber Goods which have become hard and brittle by exposure to light and lost their elasticity, may be restored by immersing the article for a short time in a mixture of water of ammonia 1, and water 2 parts. When the mixture has acted enough on the rubber, it will be found to have recovered its elasticity and softness.

Seasonable Suggestion. — See that hydraulic chandeliers are properly charged with water. The tube should be nearly filled with water, then add an inch of oil on the top ; this prevents evaporation and thus renders the safeguard permanent, or nearly so.

Elaterium.—The most violent purgative known; is a deadly poison in doses of two or three grs. or upwards; the treatment being demulcents, with opium and stimulants.

Artificial Mineral Waters.—"What," says the writer of 'THE MONTH,' *Pharm. Journ.*, "should a suspicion cross the mind that certain waters, described in such a way, that mentally they may be seen flowing and sparkling from the real springs, were after all—compounded? And where is the guarantee that many of them are not? For viewing the published analyses of mineral waters it is so palpably easy to make them artificially, that, for the moment, at least, the suspicion forces itself upon the mind.

"Solutions containing in a concentrated form the peculiar constituents of mineral waters, could easily be prepared, and upon the addition of a small quantity to ordinary water, charged with carbonic acid gas, such artificial mineralized waters would not be distinguished from the most charming natural waters of Germany or other countries."

Home-made Seltzer Water without a Machine.—Fused chloride of calcium 4 grs., chloride of magnesium 12 grs., chloride of sodium 15 grs., citrate of iron ½ gr., tartaric acid 2 drms., bicarbonate of soda 2½ drms., both in crystals. Dissolve all the salts, excepting the tartaric acid and bicarbonate, in about one pint of water, and introduce the solution into a champagne bottle. Then, having completed the requisite quantity of liquid so as to leave an empty place of about 2 fluid ounces, add the tartaric acid, and immediately after the bicarbonate of soda. Cork immediately and tie down at once, and set the bottle on its side for about six hours, when it will be ready for use.

To Remove Glass Stoppers. — The following answers well when the form of the stopper and neck of the bottle will admit of its use. Take two pieces of wood and put them between the neck of the bottle and the lower part of the stopper. Having fixed them securely by a piece of string, soak the whole affair in water, say ten hours. If the wood has not swelled enough, pour some hot water over the wood, and as it swells (which it must) out comes the stopper.

Loosening Glass Stoppers.—*The American Pharmacist* says, the ordinary cork press serves an excellent purpose as a vice for removing fixed stoppers, in using which it is advisable to protect the stopper by a fold of cloth.

Non-Blistering Mustard Plaster.—Few people know how to make a mustard plaster. As generally made they blister the skin, which they should not do. Use the white of an egg instead of water, and the plaster will draw thoroughly without hurting the skin.

Peruvian Balsam and Vaseline.—In order to combine these two articles, Hager recommends a small addition of bees-wax. Werner mentions alcohol, or castor oil.

Adhesive Plaster from Birdlime.—It may not be generally known, says the writer of "THE MONTH," that birdlime can be dried and powdered, and will regain its properties when moistened. The properties of this substance certainly deserve examination from a surgical point of view, and its portability and easy application might permit of its forming a portion of the kit of every soldier when in action, as a good adhesive plaster could be made with it, which would prove of incalculable value in the absence of surgical aid.

To Deposit Gold from Solution.—The method most approved by workers in electro-gilding to obtain the gold from the cyanide solution, is to add sulphuric acid to the solution until no further hydrocyanic acid gas is given off, taking precautions to avoid the poisonous fumes. Allow the mixture to stand, pour off the supernatant liquid, wash the precipitate with hot water, dry it, and mix it with a little potash. This material, fused at a red heat in a crucible, will yield a button of gold.—*C. & D.*—15/5/73.

Cost of Gas.—The annual cost of coal used for making gas is about £5,400,000; but the bye-products derived from it, in addition to the gas—namely, colouring matters, ammonia, pitch, creosote, crude carbolic acid, coke—are worth £8,370,000, or nearly £3,000,000 more than the coal cost.—Dr. C. W. Siemens, F.R.S.

Minute Trichinæ.—It would take 35,000,000 of trichinæ to equal the weight of 1 dr. An effectual remedy was at length discovered by the administration to adults of a dose consisting of 14 grs. of hydrosulphide of potash, along with an equal weight of vegetable substance, such as boiled carrot, parsnip, or potato.—*Ibid.*

Oil of Arnica.—There is an oil bearing this name derived from both root and leaves of *Arnica montana.* That from the root is soluble in 2 pts. of spt. vin. rect. That from the flowers requires 100 pts. for solution.

Tincture of Hops.—In a Portuguese paper, *Boletin del Collegio de Farmaceuticos de Barcelona,* aromatic spirit of ammonia is recommended for the purpose of making tincture of hops, since neither water nor alcohol extracts the principles of that drug.

Chemical Change of Colour.—Mr. W. T. Halliday *(Ph. J.)* draws attention to the change of colour of the following lotion:—*Hyd. perchloridi* 2 *grs., hyd. subchloridi* 20 *grs., aqua calcis* 2 *ozs.* If the calomel is mixed first, and a solution of sublimate, often kept for convenience, added last, a black deposit—black oxide of mercury is formed; but if the sublimate is dissolved in the lime water, and the calomel added afterwards the red oxide is deposited.

Causes of Blindness.—At the present time a very large portion of the blind owe their misfortune to the ravages of small-pox.—W. H. Levey, F.R.G.S., in *Blindness and the Blind.*

Some medical professors say that wearing green aprons tends to lessen the ill-effects of fine work on the eyes.—*Ibid.*

The injurious influence of tobacco on the sight is, to some extent, counteracted by alcohol.—*Ibid.*

Colour Blindness.—Dr. Wilson is of opinion that one person in every 50 mistakes red for green, brown for green, and purple for blue, and including all kinds of colour-blindness, he thinks that one in 20 is colour-blind.—*Ibid.*

Spectacles.—Many opticians recommend pebbles at a high price, and depreciate glass, but glass lenses are for all practical purposes quite as good as pebbles, and very much cheaper.

How to tell Pebbles.—The chief advantage of pebbles over glass is that they are harder, and do not so easily scratch in use, while at the same time they can be made somewhat thinner and lighter. Pebbles should be cut from the original block of rock crystal in the right direction, or they will be infinitely worse than the cheapest modern glass. A good way to tell a pebble roughly from glass, is to touch it with the tongue, when, being a better conductor of heat than glass, it will feel much colder. Opticians keep a little instrument for testing pebbles by which, when held up to the light, little rings of colour will be visible, and if these rings be circular the pebble will have been properly cut, whereas if they are elliptical or irregular in shape the reverse will be the case.

*How to choose Spectacles.**—The strength of spectacles is measured in inches in terms of its focal length. Thus a glass No. 48 means that its focal length is 48 inches; the series extending from about 60 inches up to 2. The longer the focal length the weaker the glass is, and *vice versâ.* The focal length is obtained by holding up the glass to a light, and observing at what distance off the bright spot or "focus" is formed against a wall, and to choose your glasses ascertain the focal length your condition of sight requires. Here is a thoroughly practical and very easy way of doing this. Take some small type, and with your back to the light find out what glasses will enable you to read it comfortably at the distance of eight inches. If your age is fifty you will require, approximately, glasses of about No. 40; if fifty-five, No. 30; if sixty, No. 20; if sixty-five, about No. 13. A good practical rule is to choose the strongest pair with which vision at 8 in. is comfortable. Before, however, deciding, the glasses must be worn, and read with for, at least, ten minutes continuously. If they will bear this test, they will certainly do for 12 in., which is the ordinary reading distance. The great point to attain in spectacle glasses is the happy mean of a maximum of improvement with a minimum of strain upon the eye. There is no better test of this having been attained or not, than an individual's own sensation after say a quarter of an hour's steady reading.~~—Condensed from *Cassell's Family Magazine.*~~

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* See "Approved Remedies for the Eyes," Longsightedness, p. 223.

How to use Eye Water.—The best method of employing collyria or eye lotions is to direct the patient to sit, holding his head well back, so that the chin is slightly above the level of the forehead, and, while so, to turn his face a little on one side, so that the eye to be treated is slightly above the level of the other. In this position, the lids being shut, the collyrium is to be poured by the patient or a friend into the cup or hollow formed by the inner half of the orbit with the root of the nose. The patient has now only to blink a few times in order to use in the most efficient manner the collyrium. This plan is preferable to the use of eye-water-glasses and other customary methods.—*Skin Hosp. Pharm.*

USEFUL SELECT FORMULARY.

Tincture Phosphorus.—The following is given by Dr. Ashburton Thompson, in a paper "On the use of Phosphorus in Neuralgia," in *The Practitioner*:—Phosphorus 1 gr., absolute alcohol 5 drs., glycerine 1½ ozs., spt. of wine 2 drs., spt. of peppermint 2 scrs. Dissolve the phosphorus in the alcohol with a little heat; at the same time warm the spirit and glycerine together. Mix the two solutions while hot, and add the spirit of peppermint on cooling. 1 dr. of this mixture contains $\frac{1}{12}$th of a grain of pure phosphorus. These ingredients form a mixture perfectly bright and clear, possessing almost no phosphoric odour or taste, and of a high degree of stability even under exposure to light. The amount of spirit gives it a burning taste, but if the patient be warned of this it would not be objected to. So far as causing offensive eructations, it seems to have a tendency to arrest existing flatulency.

Tincture of Cochineal (by E. L. Jones).—Six parts of finely powdered cochineal are to be macerated in a steam bath, with 72 parts of distilled water, until the fluid is reduced to one-half its bulk, and then filtered. The residuum is to be washed with a mixture of 30 parts of water and two parts of solution of ammonia. Both resulting liquids are to be mixed, and to be evaporated to 36 parts, and when cold 36 parts of rectified spirits are to be added. The tincture thus obtained is of a dark red colour with a shade of violet of the consistence of a very thin syrup, and gives no sediment.—*Archiv. der Pharm.*

Tartrinel Ferri Iodidi.—Liquor ferri iodid. 1 oz., acid tart. ½ oz., mellis 12 oz., aq. distil. q.s. Dissolve the acid in 1 oz. of water with the aid of gentle heat, and add the honey previously melted, then add the solution of iron; make up 12 ozs. with water, and filter.

Tincture Calendulæ (Henry Brown, *Ph. J.*)—This was once officinal in the E. P. It is the common marigold prepared by macerating 4 or 5 ozs. of the dried flowers in one pint of proof spirit: an old remedy in jaundice, small pox, uterine affections, and cardiac diseases. The dose is 1 to 3 drs. In larger quantities it is emetic.

Tincture Physostigma.—Calabar beans, powd., 100, alcohol 80° 500 parts; macerate 10 days and filter.—*Societ. Pharm. de Paris.*

G. W. Kennedy, in a paper read at the fifth session of the *Amer. Phar. Association*, gives the following formulæ: Calabar bean in moderately fine powder 4 ozs., alcohol 95° 24 ozs., water (distilled) 8 ozs. Mix the alcohol and water, moisten the powder with 2 ozs. of the menstruum, pack in a conical glass percolator, and cover the surface of the powder with a disk of paper, and pour 6 ozs. of the menstruum on it; cork, and cover the percolator closely, and allow it to remain in this condition four days, after which remove the cork, and proceed with the percolation and with the same menstruum until 2 pints of tinct. are obtained, which will be found sufficient to exhaust the bean.

Carbolic Acid Lotion for External Use.—Acid 1 part, barley water 30 parts; agitate well and filter.

For Dressings, Burns, Scalds, &c.—It is advisable to dissolve the acid in either pure olive oil, almond oil, or glycerine (1 to 8 or 10).—*Calvert.*

Note.—If any carbolic acid should fall on the skin, its caustic effect can quickly be remedied by the application of sweet oil. If taken internally, large doses of sweet oil and castor oil should be at once administered.—*Calvert.*

Lotio Niger.—Calomel 10 grs., lime water 1 oz., mucilage of gum trag. 1 dr. Mix.—(*Hospital for Diseases of the Skin Pharm.*)

Liniment. Hydrarg. B.P.—Lin. camph. 1 oz., tinct. quillaya 3 drs. (liq. ammon. fort. 2 drs., aqua ad. m. 40) 5 ozs., ung. hyd. 1 oz. According to Mr. Collier this forms a very satisfactory preparation.

Giles' Liniment of Iodide of Ammonium.—The following, according to Theodore G. Davis (*Amer. Jour. of Pharm.*), forms a very similar preparation:—Iodide of ammon. 2 grs., camphor, oil of lavand. āā 1 dr., water of ammonia 4 ozs., alcohol q.s. to make 1 pint, and mix well.

Tincture of Myrrh and Borax.—Gum myrrh 2 ozs., rad. krameriæ ½ oz., spt. vin. rect. 24 ozs. Let it stand 14 days, then strain and add sodæ bibor. 3 ozs., aqua ferventis 6 ozs., glycerine 12 ozs., perfume q.s.—*C. & D.*

Tincture of Wild Cherry Bark.—Wild cherry bark, bruised, 2 ozs., proof spt. 20 ozs., digest 14 days, express and filter; or, better by displacement or percolation. Dose, from 2 drs. to ½ oz.

Infusion of Wild Cherry Bark (*Infus. Pruni Virginianæ, U.S.*)—Wild cherry bark, bruised, ½ oz., cold water 16 ozs.; macerate for 24 hours and strain, or, better by percolation. It should be bright, of the colour of Madeira wine, and of an agreeable bitterness. Dose 2 ozs. or more.

Syrup of Wild Cherry Bark (*Phar. U.S.*)—Wild cherry bark, in coarse powder, 5 ozs., sugar (refined) 2 lbs., water (cold) a sufficient quantity, moisten the bark thoroughly with water, let it stand for 24 hours in a close vessel, then transfer to a percolator, and pour water upon it gradually until 16 ozs. of filtered liquid is obtained; to this add the sugar in a bottle, and agitate until dissolved. Dose, ½ oz.

Saccharated Tartrate of Soda.—Bicarb. soda 2 ozs., tartaric acid $2\frac{1}{2}$ ozs., sugar 10 ozs., ess. of lemon q.s. Have the powders perfectly dry, mix them thoroughly in a warmed mortar, fill into warm bottle, and cork immediately. A dessertspoonful to a tablespoonful in a tumbler of iced water forms an agreeable drink in summer, and is mildly aperient.—*The Pharmacist.*

Salicylate of Quinine.—Mr. Dearden, of Church, near Accrington, has published in the *Lancet* the following formula for preparing this substance extemporaneously:—Salicy. acid 1 dr., disulph. of quin. 10 grs., simple syrup 1 oz., strong liq. ammon. 1 dr., water to 12 ozs. The acid and quinine are put into the bottle with about 8 or 9 ozs. of water, the liquid briskly agitated for a few seconds. The bottle is allowed to stand a little while uncorked, the liq. ammon. then added, and finally the syrup and the rest of the water. A few drops more of the ammon. may be required to get a perfectly clear solution. It is necessary that only the natural salicylic acid be used, or, at all events, salicylic acid freed from the other acid which Mr. J. Williams showed to be present in salicylic acid obtained from carbolic acid. It is impossible to say until more is known of that second acid, how far the case of poisoning by salicylic acid and salicylates may be due to its presence in commercial salicylic acid.—"THE MONTH," *Ph. J.*, 29/5/80.

Balsamum Salicylico-Benzoinatum.—By a mixture of Siam benzoin, pitch, salicylic acid, gurjun balsam, and absolute alcohol, a mass which much resembles balsam of Peru is prepared. It forms a cheap substitute for this substance. It is especially adapted for healing wounds, and for use in veterinary practice.

Sellers' "Mistura Bismuthi Comp."—The following is said to be the composition of this excellent preparation:—Liquor bismuthi 1 dr., chloric ether 15 drops, tinct. nux vomica 8 drops, hydrocyanic acid P.B. 2 drops, hydro-chlorate of morphia $\frac{1}{24}$th of a grain, coloured as comp. tinct. of cardamoms. The dose is half a drachm.

Citrate of Iron and Magnesia.—This elegant preparation is made by dissolving the fresh precipitated hydrated oxide of iron in a solution of citric acid, and subsequently saturating the liquid with carbonate of magnesia, which is then to be evaporated. It is in the form of bright brownish scales or plates, soluble in water, and of by no means a disagreeable taste. It has the advantage over the ferro-citrate of ammonia in not being so deliquescent, even if at all so; therefore it may be prescribed in the form of pills or powders, as well as in solution. The dose is from three to six grains, and it does not, like some other preparations of iron, produce costiveness. A syrup, prepared according to this formula, is recommended as being one of the most agreeable of all the known preparations of iron; eight parts of citrate of iron and magnesia are to be dissolved in 16 parts of orange flower water, to which 180 parts of simple syrup are to be added.—*Annals of Pharmacy.*

Jayne's Expectorant.—Syr. squill 2 ozs., tinct. tolu 1½ ozs., tinct. camph., lobelia, digitalis, of each 1 dr., tinct. opium 2 drs., powdered ipecac. 4 grs., tartar emetic 4 grs. Mix. Dose not given.—*Drug Circular.*

Manna as a Medicine.—It is much to be regretted, says Mr. Joseph Ince, that manna has to so large an extent disappeared from English pharmacy. Abroad it is in constant use. I regard manna, dissolved in milk, as far as the treatment of children is concerned, to be a gift of God. It is a safe and effectual laxative, and does not *physic* an infant, the main thing to be avoided.

An Elegant Compound Quinine Mixture.—Dec. sarzæ co. 5, ext. cinchon. liq. B.P. 2, spt. vin. rect. 3, tinct. quinæ co. 2, syr. aurant. 4 parts. Mix. Dose, 1 to 2 drs. in water. If the addition of dandelion be desired, the succus tarax. B.P. may be used, but then the mixture is not quite clear.—J. H. BALDOCK, South Norwood.

Pepsine Wine.—Pepsine 1½ drs., dist. water 6 drs., white wine 15 drs., white sugar 1 oz., spt. of wine 3 drs. Mix until the sugar is dissolved, and filter. One tablespoonful contains about 15 grs. of pepsine. To be taken after meals.

Lactopeptine (*American*).—Sugar of milk 40 ozs., pepsine 8 ozs., pancreatine 6 ozs., veg. ptyalin or diastase 4 drms., lactic acid 5 drms., hydrochloric acid 5 drms.

Vinum Diureticum.—Bacc. juniperi 50, fol. digitalis 10, rad. scillæ 5, vini albi 750 parts. Macera per dies quatuor deinde adde potassæ acetalis partes 15, et filter. Dose, two or three tablespoonfuls daily.—*Bullet. Therapeut.*

Birch Oil or Tar (*Oleum betula empyreumaticum*).—Dissolves in alcohol and ether, and is itself a solvent for resins. *Tincturi rusci*, which is occasionally prescribed in the United States, is made by dissolving 1 part of the tar in 4 parts of alcohol. HAGER's *Liniment for Rheumatism and Gout* is thus made : tar 10, alcohol 15, ether 15, oil of lavand. ½, of rosemary ½, of rue ½ part. HEBRA's *Tar Pomade, for Skin Diseases*, consists of tar 1 part, rubbed up with vaseline or ozokerine 4 parts. *Birch Oil* has been given internally in various diseases of the skin, &c., in doses of 6 to 10 drops three times a day, in the form of pills.

Liq. Ferri et Ammonii Succinatis is prepared by dissolving 50 grains of acid in 3 ozs. of water, neutralizing with ammonia, diluting to 6 ozs., and adding ½ oz. of liq. ferri persulph. U.S.P. The precipitate which falls is to be collected and thoroughly washed, and then dissolved in a strong solution of ammonium citrate, made by neutralizing 89 grains of citric acid with water of ammonia. A gentle heat will assist the solution of the ferrous succinate. The liquor should be made to measure 6 ozs., and will then contain 2 grs. of the iron salt to each drachm.

Superior Ink for Steel Pens.—Sound nut galls 8 ozs., sulphate of iron (free from copper) 4 ozs., gum arabic 4 ozs., rain or distilled water 96 ozs. To prevent mouldiness add a few drops of creosote or carbolic acid.

Writing Ink.—The *Bunzlauer Pharm. Zeitung* gives the following prescription :—Take 7 lbs. of logwood and 2 lbs. of galls in coarse powder, and boil them with 60 pints of water for two hours. In the strained and cooled decoction dissolve 4 lbs. sulphate of iron, add 6 ozs., by weight, of strong solution of perchloride of iron, and after having exposed the liquor to the air in an open vessel for ten hours, add finally 2 ozs., by weight, of acetic acid and gum acacia q.s.—H. W. LANGBECK, in *Pharm. Jour.*

Elsner's Ink.—Exhaust 75 parts of nutgalls with 250 parts of water. Pour 25 parts of fuming sulphuric acid on 12 parts of best powdered indigo, contained in a large capsule, and let it stand for twenty-four hours. Then dilute the contents with 250 parts of water. Add to the diluted liquid 22 parts of clean iron-filings or turnings, and 15 parts of chalk. After a few days, during which the mixture is frequently stirred, but as little as possible exposed to the air, it is filtered, and the filtrate added to the nutgall decoction, which has likewise been filtered. This ink first writes greenish, and afterwards turns blue-black.—*New Remedies.*

Logwood Inks.—Julius Kruger recommends the following as good formulæ:—(1) Dissolve 1 lb. ext. logwood in 15 lbs. of water, and add 1 oz. alum and ½ oz. of yellow chromate of potass. (2) Boil 10 lbs. best rasped logwood with 100 lbs. of water down to 80 lbs. When cold add 1½ ozs. of yellow chromate of potass, previously dissolved in 5 ozs. of water. (3) Boil 1 pt. best rasped logwood, and 3 pts. bruised nutgalls, with 36 pts. of water, strain and add 1 pt. green sulphate of iron, and 1 to 2 pts. gum arabic. (4) Dissolve 1 pt. ext. logwood in 50 pts. of water, and add 2 pts. potash-alum. This ink is known in trade as "Kaisertinte"—Imperial Ink. (5) Dissolve 1 pt. ext. logwood in 50 pts. of water, add enough solution of chloride of tin to produce a deep violet; others recommend in place of chloride of tin, acetate of manganese, or acetate of iron, or other metallic salt. Owing to the unequal composition of the commercial ext. of logwood, it is necessary to assure one's self that the ink is not overcharged with metallic salts. This is best done by taking a small quantity of the finished product, heating it to boiling and exposing it afterwards for some time to air and light, when it should not deposit a copious precipitate.—*Neueste Erfind, und Erfahr.*

Excellent Copying Ink (Adolph. Ott).—Extract logwood ½ lb., alum 2 ozs., sulphate copper 4 drs., sulphate iron 4 drs., sugar 1 oz. Boil with 4 pints water, filter through flannel, add in solution chromate potash 4 drs., water 4 ozs.; finally Chinese blue (a solution of indigo in oil of vitriol, called also "blue dye") 2 ozs., in glycerine 2 ozs.—*Scient. Amer.*

Marking Ink to Remain Red.—M. Wegler says a red marking ink may be made by beating up the white of an egg with its volume of water, straining it through fine linen, then mixing with it finely powdered vermilion. It can be used with an ordinary pen. When the writing is dry pass a hot iron over the back of the fabric which fixes the vermilion in the tissue. (?) Soap, acids, or alkalies do not affect it.

Bay Rum. — Ol. of bayberry (*Pimenta acris*, not *laurus*) 1 oz., Jamaica rum 1, alcohol 4, water 3 pints. Mix the rum, alcohol, and water; then add the oil; mix and filter.—*C. & D.*

Bay Rum.—Take of alcohol 4, water 3, Jamaica rum 1 part, oil of bay 1 dr., oil of peppermint 20 drops. A few drops of aqua ammonia give the requisite colour to a whole gallon. This American formula is said to produce an excellent article.—*Pharm. Jour.*

American Bay Rum (Mr. Brockwright, of Romsey).—Oil of bay 10 drs., oil pimento 1 dr., acetic ether 2 ozs., alcohol 3 gals., water 2½ gals. Mix and filter after a fortnight.—*C. & D. Diary.*

Diamond Ink for Writing on Glass is prepared by mixing barium sulphate 3 pts., ammonium fluoride 1 pt., and sulphuric acid sufficient for decomposing the ammonium fluoride, and making the mixture of a semi-fluid consistency. It should be prepared in a leaden dish, and is preferably kept in a gutta percha or leaden bottle. It is used with a common pen, and at once etches a rough surface on the glass it comes in contact with. The barium sulphate seems to act as an absorbing medium, to prevent the spreading of the watery liquid, and to make the acid etch a rougher surface, thereby giving it a whiter and more ground-glass-like appearance. Care should be taken to avoid the fumes of *hydrofluoric acid*, which are extremely corrosive and poisonous.—*Amer. Journ. Pharm.*

On Diamond Ink.—Mr. F. L. Slocum says liquid hydrofluoric acid etches glass, leaving a smooth surface; the fumes of the acid, however, act on glass, leaving a slightly rough surface. Ammonium fluoride, dissolved in water, etches a still rougher surface on slight heating;

but if this salt is mixed with an equal bulk of barium sulphate, moistened with water and gently heated, a very rough and opaque surface is produced.—*Scient. Amer.*

Copying Ink to be used without a Press.—Well mix good writing ink 3 parts, glycerine 1 part. This, if used on glazed paper, will yield one or two fair copies by simple pressure of the hand in an ordinary copying book, without water. The writing should not be too fine. To prevent "setting-off," place a sheet of blotting paper over the leaf. The copies and the original are neater than when water is used.

Good Red Ink.—Carmine 1 scrup., liq. ammon. fort. ½ drm., gum arabic 1 scrup., distilled water 3 oz.; mix.—*C. & D.*

Extemporaneous Black Ink.—Take of acid tannic, acid gallic, āā 20 grs., dissolve in water 2 oz.; ferri sulph., ferri subsulph. sicc. (Mousel's Salt), āā 15 grs., dissolve in water 2 oz. Mix the two solutions and add mucilage 2½ drms., oil of cloves 2 dps., or carbolic acid 5 dps. Not a cheap, but good ink.

Useful Varnishes. — FOR OIL PAINTINGS. — Gum mastic (in powder) 4 oz., gum copal (selected) 2 oz., powdered glass 4 oz., pale linseed oil 8 oz., rectified spirit of turpentine 1½ pints. Put the gum, with the oil and glass, into a copper or porcelain vessel, heat by a sand bath and stir till dissolved; then add the turpentine while cooling.

FOR MAPS, PRINTS, &c.—(No. 1) Gum mastic 2½ oz., g. sandrach 1 oz., g. camph. ½ oz., alcohol 95° 8 oz. Dissolve. (No. 2) Balsam of Canada 1 oz., spirit of turpentine 2 oz. Mix. Before using this varnish the paper should be sized with a solution of isinglass, and allowed to dry.

Varnish or Lacquer.—FOR GILT WARE.—Gum shellac (orange) 2 oz., g. gamboge 1 oz., dragon's blood 1 oz., saffron 1 oz., alcohol 1 pint. Dissolve and decant.

FOR FURNITURE.—Bees' wax (yellow) 2 oz., colophony ¼ oz., gum damar 1 oz., spirit of turpentine 1 pint. This takes a fine polish with rubbing.

Amber Varnish.—Previously heat the amber in an iron pot, over a clear fire, till it softens. Drying linseed oil, previously heated, is to be poured in and well stirred, in the proportion of ten ounces to one pound of amber. After the incorporation is complete, and the liquid slightly cooled, a pound of oil of turpentine should be added.

Bronzing Liquid.—Ten pts. aniline red, 5 pts. aniline purple, dissolved in 100 pts. of 95 per cent. alcohol, in a water bath; then add 5 pts. benzoic acid, and heat the mixture until the greenish colour changes to a light bronze-brown. This liquid when brushed on to metal, wood, or leather, produces a beautiful bronze effect.—*The Pharmacist.*

Watchmakers' Oil.—Expose olive oil to a low temperature, pour off the fluid portion, and expose this to the action of light and the sun's rays, with a piece of metallic lead immersed in it for several weeks. Separate the deposit by filtration.—*Pharm. Jour.*

Furniture Polish.—Linseed oil 2 pints, spt. camph. ½ pint, brown vinegar ½ pint, butter of antimony 2 oz., turpentine ½ pint.

Liquid Finish for Starch Gloss.—Spermaceti 1 oz., gum arabic (best white) 1 oz., borax 1 oz., glycerine 2½ oz., water 14½ oz., perfume q.s. Three teaspoonfuls to about 4 oz. of boiling starch paste.—*Canad. Pharm. Jour.*

Baking Powder.—Sodæ bicarb. 16 ozs., pulv. acid. tart. 14 ozs., pulv. magnes. carb 6 ozs., pulv. farinæ 12 ozs. Put through a sieve.—*C. & D.*

Tar Ointment (J. B. Moore, in *Drug Circular*).—(No. 1) Lard 3 pts., yellow wax 1 pt., and tar 4 pts. (No. 2) Vaseline 3 pts., yellow wax 1 pt., tar 4 pts. (No. 3) Cosmoline 3 pts., yellow wax 1 pt., tar 4 pts. Melt the wax, then add the lard, vaseline, or cosmoline, and when liquefied add the tar; *remove* from the fire and stir the mixture constantly while cooling. The tar used should be the pure strained tar, such as is sold in cans: when the ingredients are pure no straining through muslin is necessary.

St. Jacob's Oil.—A correspondent in *Drug Circular* gives the following:—Ol. of Scotch fir 8 oz., camphor 8 oz., Amer. turpentine 8 oz., ol. sassaf. 4 oz., origan. 4 oz., rosemary 2 oz., juniper 2 oz., smoke ½ oz., alkanet root q.s. to colour, deodorized naphtha to make two gallons.

The first and third articles, we suppose, mean the essential oils; ol. of smoke, we presume, is creosote, but this is not quite so certain. In *Kilner's Compendium* we find the following more satisfactory formula:—Camph. 1 oz., chlor. hydrate 1 oz., chloroform 1 oz., ether 1 oz., tinct. of opium ½ oz., ol. origanum ½ oz., ol. sassaf. ½ oz., alcohol 4 pints.

Arquebusade.—The following is a very old and satisfactory form:—Ol. menth. sativ., ol. fœnicul. dulc., āā 5 m., ess. bergam. 10 m., aq. rosæ 4 oz., spt. vin. rect. 12 oz.; m. —E. Rook, *Pharm. Journ.*

Ol. Flavæ Conc. is prepared by saturating olive oil or almond oil with gamboge.

To make Ice Cream.—Scald a gallon of good sweet milk, and add to it, with constant stirring, 8 eggs well beaten with 1 lb. of white sugar and 4 tablespoonfuls of corn flour. First, mix into a thick cream with cold milk, cool, flavour to suit, and freeze.—*Scient. American.*

Harmless Pharaoh's Serpents.—Instead of the poisonous salt formerly used for this purpose, the less hurtful bichromate of potassium or ammonium is now suggested. For this purpose, two parts of bichromate of potassium, or better, bichromate of ammonium, are mixed with one part of potassium nitrate and three parts of dry white sugar. Each of the ingredients is to be powdered separately, and afterwards they are to be thoroughly and carefully mixed together. Then having made small paper cones of the desired size, press the mixture into them. They are now ready for use, but must be kept from moisture and light.

Arsenical Soap.—Camphor 5 ozs., arsenic in powder 2 lbs., white soap 2 lbs., salts of tartar 12 ozs., lime in powder 4 ozs. Cut the soap in small slices, as thin as possible, put them in a pot over a gentle fire, with very little water; taking care to stir it often with a wooden spatula; when it is well melted, put in the salts of tartar, and powder chalk. Take it off the fire, add the arsenic, and triturate the whole gently. Lastly, put in the camphor, which must first be reduced to powder in a mortar by the help of a little spirit of wine; mix the whole well together. The paste ought then to have the consistence of flour paste. Put it into china or glazed earthen pots, taking care to place a ticket on each. When it is to be used, put the necessary quantity into a preserve-pot, dilute it with a little cold water until it has the consistence of clear broth; cover this pot with a lid of pasteboard, in the middle of which bore a hole for the handle of the brush which serves to anoint the animal.

Removal of Stains and Spots from Clothing, &c. —MATTER ADHERING MECHANICALLY.—Beating, brushing, and currents of water, either on the upper or under side.

GUMS, SUGAR, JELLY.—Simply washing with water at a hand heat.

GREASE.—White goods, wash with soap or alkaline lyes. Coloured cottons, wash with lukewarm soap lyes. Coloured woollens, the same, or ammonia. Silks, absorb with French chalk, or fuller's earth, and dissolve away with benzin or ether.

OIL COLOURS, VARNISH AND RESIN.—On white or coloured linens, cottons or woollens use rectified oil of turpentine, alcohol, chloroform, benzin, lye and soap. On silk, use benzin, ether and mild soap.

STEARIN.—In all cases, strong pure alcohol.

VEGETABLE COLOURS, FRUIT, RED WINE, AND RED INK.—On white goods, sulphur fumes or chlorine water. Coloured cottons and woollens, wash with lukewarm soap lye, or ammonia. Silk, the same, but more cautiously.

ALIZARIN INK.—White goods, tartaric acid, the more concentrated the older the spots. On coloured cottons and woollens, and on silk, dilute tartaric acid is applied cautiously.

BLOOD AND ALBUMINOID MATTER.—Steeping in lukewarm water. If pepsin or the juice of *Carica papaya* can be procured, the spots are first softened with lukewarm water, and then either of these substances is applied.

IRON SPOTS AND BLACK INK.—White goods, hot oxalic acid, diluted muriatic acid, with little fragments of tin. On fast dyed cottons and woollens, citric acid is continuously and repeatedly applied. Silks, impossible.

LIME AND ALKALIES.—White goods, simple washing.

ACIDS, VINEGAR, SOUR WINE, MUST, SOUR FRUIT.—White goods, simple washing, followed by chlorine water if a fruit colour accompanies the acid. Coloured cottons, woollens, and silks are very carefully moistened with diluted ammonia with the finger end. In cases of delicate colours, it will be found preferable to make prepared chalk into a thin paste with water, and apply it to the spots.

TANNIN FROM CHESTNUTS, GREEN WALNUTS, LEATHER, &c. —White goods, hot chlorine water and concentrated tartaric acid. Coloured cottons, woollens and silks, apply dilute chlorine water continuously to the spot, washing it away, and reapplying it several times.

TAR, CART WHEEL GREASE, MIXTURES OF FAT, ROSIN AND ACETIC ACID.—On white goods, soap and oil of turpentine, alternating with streams of water. Coloured cottons and woollens, rub with lard, let lie, soap, let lie again, and treat alternately with oil of turpentine and water. Silk, the same more carefully, using benzine instead of oil of turpentine.

SCORCHING. — White goods, rub well with linen rags dipped in chlorine water. Coloured cottons, re-dye if possible; or in woollens, raise a fresh surface. Silks, no remedy.—*Chemical Review.*

NITRATE OF SILVER STAINS.—By means of a solution of bichromate of mercury, or with compound tincture of iodine, after which to wash in a strong solution of cyanide of potassium, and finally rinse in distilled water, or wet the part which is stained with a solution of bichloride of mercury, and then causing the linen to be well washed in cold water. The strength of the solution of the bichloride of mercury is one part of bichloride to 31 of distilled water.

INK, WINE, AND FRUIT STAINS.—The juice of the tomato, it is said, will remove these.

IODINE STAINS.—With a solution of hyposulphide of soda.

Removal of Rust.—Iron stains are readily removed from white goods by soaking the stains in a weak solution of tin chloride, and rinsing immediately with much water. The tin salt is more reliable in removing iron rust, and quicker in its action than oxalic acid, unless the stains are soaked in a solution of the latter contained in a tin spoon, when the stains disappear in a shorter time.—*Phar. Centrall.*

Felt Corn and Bunion Plaisters.—Take of prepared felt in sheets about 20 inches square, stretch by being tacked down on all sides upon a wooden board, a few inches larger each way. A sheet of the best cream white tissue paper, coated upon one side with a warm solution of isinglass, is then laid upon the felt and gently pressed all over to ensure its adhering equally. The sheet of paper should be larger than the felt—the margin falling over the edges being stuck down to the board. The board is then hung or placed to dry. When quite dry, the surface of the paper, even, taut, and freed from dust, is to be spread with a fine coating of the isinglass, and again dried. This latter operation is repeated several times, but great care must be taken not to use the solution too hot or too thick or it may tear up the previous coatings. (Where convenient, the sheets, after each coating, may be gently rolled or pressed.) Finally, dry and rip the paper round the margin and draw out the tacks. The cutting out or punching is done on a block of wood, end up, and planed smooth; the sheet is laid surface downward. The punches, round or oval, are to be obtained at Buck's tool warehouse, Holborn Viaduct, London. Prices from about 10/- a-piece. For laying on the solution, use a good, wide, flat camel-hair brush with short hairs.

To Remove Stains from Scarlet Cloth.—Pure nitric acid at 30° B. 3 parts; muriatic acid at 17°, 1 part. Shake gently, avoiding the corrosive vapours. Loosely stopper the bottle. Put into this mixture ⅛th of its weight of pure tin, in small bits at a time. When all is dissolved and settled, decant it into bottles, and close with ground stoppers. It should be diluted only when used. This is a recipe for *eau ecarlate* that cost a guinea a bottle.—From *The Book of the Horse.*

Gum Mucilage for Labels.—Dextrine 2 oz., acetic acid 1 oz., water 5 oz. When thoroughly dissolved and cooled add alcohol 1 oz.

Strong Adhesive Glue Paste. — Four parts by weight of glue. Soften in fifteen parts of cold water for some hours, and then moderately heat till the solution becomes quite clear. Sixty-five parts of boiling water are now added with stirring. In another vessel thirty parts of starch paste are stirred up with twenty parts of cold water, so that a thin milky fluid is obtained without lumps. Into this the boiling glue solution is poured, with constant stirring, and the whole is kept at the boiling temperature. After cooling, ten drops of carbolic acid are added to the paste. This paste is of extraordinary adhesive power, and if preserved in closed bottles to prevent evaporation of the water, will keep good for years.

Gum Paste.—Take of common gum arabic ½ lb., white sugar candy 2 ozs.; dissolve this mixture in about 12 ozs. of water, then strain it through a linen or a horse-hair sieve. When it has become liquid, put a part of it into a flat preserve-pot, add a spoonful of starch powder, mix the whole well together with an iron wire, which should always remain in the pot for that purpose. This gum serves for an infinity of uses, and never spoils. When it becomes dry add a little water to it.

Cattle Spice Condiment.—We (the *C. & D.*) can recommend the following as both "nutritious and appetising:"—Barleymeal 2 lbs., ground rice 1 lb., pea meal 1 lb., linseed meal 1 lb., powdered gentian ¼ lb., p. fennel fruit ¼ lb., p. fœnugreck ¼ lb.

Fine Salad Dressing.—Put 12 eggs into a mortar, add 3 ozs. of good Durham mustard, 1 lb. of crystallized brown sugar, rub these thoroughly together until a complete emulsion is formed; upon this being perfectly done depends the resulting fluid being a nice inseparable cream. Then add 32 ozs. of the very finest olive oil, which, when mixed with the preceding, forms a beautiful smooth yellow emulsion, to which add, little by little, 2 pints of best vinegar and 1½ ozs. of Tarragona vinegar. If properly made it will not separate, and will be as good in five years' time as the day it was made.

Salad Cream.—Good cream 4 ozs., white sugar 1 oz., yolk of an egg boiled hard, mustard ½ oz., ess. of cayenne ½ dr., salad oil 1 oz., vinegar to make up 12 ozs.; rub the yolk of egg into a uniform mass with the sugar, add the mustard and cayenne, well mix, and add the salad oil and the cream, forming a complete emulsion, then add the vinegar.

Cigar Flavours.—(1) Fluid ext. valerian 1 oz., tinct. tonka bean (1—8) 8 ozs., alcohol enough to make 32 ozs. (2) Valerianic acid 3 drs., butyric ether 10 min., acetic ether 40 min., alcohol 64 ozs. (3) Tinct. valer. 4 drs., butyric ether 4 drs., tinct. vanil. 2 drs., spt. nitrous ether 1 dr., alcohol 5 ozs., water enough to make 16 ozs.—*Canadian Pharm. Jour.*

Macaba Snuff.—Black pepper 4 ozs., salt 2 ozs., olive oil 2 ozs., water 4 ozs., best snuff 4 lbs., otto of rose 40 drops.

Tonquin Mixture.—Snuff 10 lbs., tonquin beans, finely powdered, 4 ozs., orris root powder 1 oz., water 6 ozs.; dissolve ½ oz. of copperas in 2 ozs. of boiling water. Mix all, and sift.

Cephalic Snuff.—Scotch snuff 1 lb., shumac ½ lb., scent q.s.

Quillaia Tooth Wash.—(By Alex. E. Bennett, Ph.G.)—Soap bark, ground, 4 ozs., glycerin 3 ozs., diluted alcohol sufficient for 2 pints, oil of gaultheria, oil of peppermint, of each 20 drops. Macerate the soap bark in the mixture of glycerine, and dilute alcohol for three or four days, and filter through a little magnesia previously triturated with the volatile oils. Thus made, a much better preparation is obtained than by macerating the bark in the diluted alcohol, and adding the glycerine afterwards.—*American Journal of Pharm.*

MEDICATED CONFECTIONERY.

Dr. Prosser James writes, concerning this form of remedy, that the lozenges of the B.P. are most defective on account of their hardness. They irritate the mucous surface; and the sharp corners, or the broken pieces of others, may enlarge ulcers, tear congested membrane, or do other injury. Of course, when used for their constitutional effects, these objections do not apply. A softer consistence—such as fruit paste as in the black currant lozenge, extract of liquorice as in "Pontefract cakes," and gelatine—has been utilized. The French *Pâté Guimauve* has the defect of not keeping well, and the jujubes which were formerly made with the juice of *Rhamnus Zizyphus* now never contain that fruit.

An experience of more than a quarter of a century leads Dr. James to conclude that a jujube paste will be found most useful as a base.

The lozenges herein formulated are, with the exception of those containing carbolic acid, made with *fruit paste*,* in all cases where they are prescribed for their *immediate local effect.* When employed for their constitutional action there is no objection to the hard consistence of the officinal lozenge.

Most of the lozenges contain from 70 to 80 per cent. of fruit paste in each, 1 to 2 per cent. of powdered tragacanth, 4 per cent. of sugar, and a varying quantity of the medicament, according to the formulæ given.

The patient should be directed to allow the lozenges to dissolve passively in the mouth, and fluids should not be drunk for a short time after their use.

Troch. Acidi Benzoici.—Acid 175 gr., trag. 70 gr., sugar 280 gr. (all in powder), red currant paste q.s. Mix the dry powders, add the paste until the whole weighs 1 lb.; divide into 350 lozenges of 20 gr. each, dry in a hot-air chamber at a moderate heat. Each lozenge contains about ½ gr. of benz. acid, and is marked "B.A."

Dose.—One every four hours; if used as a "voice lozenge," one should be taken a quarter of an hour before using the voice.

Use.—A most valuable stimulant and *voice lozenge* in cases of nervo-muscular weakness of the throat.

Troch. Acid. Carbol.—Acid 350 gr., powd. gum acac. 220 gr., sugar 12½ oz., muc. of gum 1 oz., dist. water q.s.

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* A well-known article of commerce with which lozenge manufacturers are quite conversant.

Mix the powders, add the mucilage and water to form 1 lb., divide into 350 lozenges, and dry. About 1 gr. of acid in each. Mark "C.A."

Troch. Acid. Tannici.—Acid 525 gr., trag. 70 gr., sugar 280 gr., black currant paste q.s. Mix as directed. Divide into 350 lozenges. Each contains 1½ gr. of acid. Mark "T."

Dose.—One every three or four hours.

Use.—Strongly astringent.

Troch. Althææ.—Decorticated p. marshmallow root 400 gr., sugar ¾ lb., g. acac. ½ lb., orange flower water and white of egg q.s. Macerate the root in q.s. orange flower water for twelve hours, strain, then add the gum and sugar; dissolve and evaporate to the consistence of honey, with constant stirring; add gradually the white of egg beaten up with more orange flower water. Evaporate until the paste will not adhere to the hand. Divide into 350 lozenges.

Use.—Emollient. Valuable after excision of tonsils, or uvula.—(See *French Pâte de Guimauve*).

Troch. Catechu.—Pale catechu 700 gr., trag. 70 gr., sugar 280 gr., black currant paste q.s. Prepare as "B.A." loz. Divide into 350. Each contains 2 gr. of catech. Mark "C.T."

Dose.—One every three hours.

Use.—Astringent. Less powerful than tannin.

Troch. Cubebæ.—Cubebs 200 gr., ext. of liquorice 1225 gr., trag. 70 gr., sugar 200 gr., black currant paste q.s. Prepared as "B.A." Divide into 350. Each contains about ½ gr. cubebs. Mark "C.B."

Dose.—One every 3 or 4 hours.

Use.—Very serviceable in diminishing excessive secretion of mucus from pharynx, larynx, or trachea. Closely resemble the "Brown's Bronchial Troches;" but black currant paste is employed, and less gum and sugar.

Troch. Guaiaci.—G. resin 700 gr., trag. 70 gr., sugar 280 gr., black currant paste q.s. Prepare, and divide into 350. Each contains 2 gr. of resin.

Dose.—One every two hours in acute inflammation; three times a day in chronic effections.

Use.—A specific for arresting crescent inflammation of the tonsils; and useful both in acute and sub-acute inflammation of the pharynx, and in acute follicular disease of the tonsils, &c.

Troch. Krameriæ.—Ext. rhatany 1050 gr., trag. 70 gr., sugar 280 gr., red currant paste q.s. Mix and divide into 350 lozenges, as "B.A." Each contains 3 gr. of extract. Mark "R."

Dose.—One every three or four hours.

Use.—A very useful astringent. Rhatany does not disagree with the stomach as is often the case with tannic acid, nor does it cause constipation to the same extent as kino and catechu.

Troch. Potas. Chloratis.—Potash in powder 1050 gr., trag. 140 gr., sugar 280 gr., black currant paste q.s. Prepare as "B.A." Divide into 350 lozenges. Contains 3 gr. each. Mark "P."

Dose.—One every three or four hours.

Use.—Stimulant and antiseptic. Useful in thrush and apthous ulceration.

Troch. Sedativi.—Ext. opium in powder 35 gr., trag. 100 gr., sugar 280 gr., black currant paste q.s. Mix as "B.A." Divide into 350 lozenges. Each contains $\frac{1}{10}$ gr. of opium. Mark "S."

Dose.—One every three or four hours.

Use.—Sedative in irritative coughs and painful condition of pharynx.—*Throat Hosp. Phar.*

Pepsine Lozenges.—Pepsine given in this form has been found most efficacious both for tape-worm and dyspepsia.—Pure pepsine 4 dr., muriatic acid 45 gr., distil. water 15 gr., glycerine 1½ dr., tragacanth p. 2 dr., red saunders (?) 8 gr. Mix, and divide into 50 lozenges.

Dose.—Five per day taken with water.—DR. WELLER, Fuerstenberg.

Chlorate of Potash Lozenge.—In the following the taste of the chlorate is agreeably disguised:—Potas.

chlor. 4 lbs., powd. sugar 16 lbs., vanillin 15 gr., mucilage of gum acacia q.s., made into lozenges weighing 25 grains each.

Mialhe's Lozenges of Tartrate of Potass and Iron.—50 pts. of the tartrate of potass and iron are to be added to 1000 pts. of sugar, 30 pts. of vanilla sugar, and 10 pts. of powdered tragacanth, the whole to be made into a smooth paste with 100 pts. water. To be divided into 1000 lozenges, and dried.

French Pâte de Guimauve. — This celebrated French confection curiously enough contains nothing to identify it with its name, but is prepared as follows :—

White Gum	1,000	grammes.
White Sugar.................	1,000	,,
Water	1,000	,,
Orange Flower Water	1,000	,,
White of Egg	No. 12.	

Great care is necessary for a successful issue. The solution of gum and sugar should be evaporated over a water-bath to the consistence of thick honey, and the white of eggs, previously well whisked with the orange flower water, should be added gradually, and the mixture constantly stirred till nearly solid. The result pays the trouble incurred, the fresh pâte being a deservedly favourite remedy for irritation in the throat, larynx, or fauces.

Laxative Fruit Lozenge.—Aqueous extract of senna first deprived of its resin 40, cassia fistula pulp 20, tamarind pulp 5, ext. of licorice (Spanish) 4, resin of scammony 4, sugar (proportionately acidulated with tartaric acid), 49 parts. Mix into large oval lozenges of 82 gr. each, which are dipped in melted chocolate, and afterwards covered with a crystalline coat of pure cane sugar.—STEARN'S *New Idea in N. R.*

How to make Peppermint Drops.—Take a convenient quantity of granulated sugar in a lipped pan, from which the contents may be dropped. Add water, just enough to form a stiff paste, about 2 ozs. to 1 lb. being about the right proportion; set it over the fire, keeping it continually stirred. It must not actually come to a full boil, but must be removed from the fire just as the bubbles begin to rise, denoting the boiling point is reached. Allow the syrup to cool a little, stirring all the time. Add strong essence of peppermint to taste, and drop on tins or sheets of smooth, white paper. Drop from the pan by means of a piece of stiff wire on to the tins or paper. If required, a little red colouring matter may be added just before the dropping.

Any flavour may be added, and a great variety of palatable sweets made in the same manner.

If desired, these drops may be acidulated with tartaric acid, and flavoured with lemon, pine-apple, &c. In the fruit season delicious drops may be made, substituting the juice of fresh fruits for the water, and, otherwise, proceeding as directed.—*Confectioner and Baker in N. R.**

LEECHES AND THEIR MANAGEMENT.

The Leech has had a reputation from the earliest period of medical science. From the time of Homer the appellation of leech was given to the practitioner of the art of surgery. It is amongst the lowest classes of the animal chain of being. It is literally a worm, and yet it has been sought after and valued in all ages. There are about fourteen species of the leech. It belongs to the class *annelides* or ringed worms. The tail extremity is in the form of a cup, by which it attaches itself firmly to flat surfaces. The mouth is also in the form of a sucker, and is furnished with *three* cartilaginous teeth, by which it produces a triangular incision. These teeth are very curious bodies. When examined, and felt with the point of the finger, they seem soft and blunt; but the animal, when about to pierce the skin, has the power of erecting them into firm, sharp-edged lancets, which saw through the integuments in an instant, and almost without inflicting any pain. They feast on blood; but, considering the myriads of these animals that exist congregated together in their native pools, it must only be on rare occasions that each individual leech can get an opportunity of fastening on any of the larger animals, and thus obtaining a meal; in fact, such an occurrence may not happen in a life-time. They will only suck the blood of living animals; but, supposing they have no access to blood, nature has endowed them with other resources. They can live for years on what appears pure water alone. They delight to feed on their gory nourishment, and yet with plain water they live, grow, and seem to have the greatest enjoyment of existence. It would appear as if their three lancet teeth and carnivorous appetites were bestowed more for the benefit of man than for themselves, and that in their system of dietetics water is the rule and blood the exception.

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* See "Select Practical Notes and Formulæ" on "Lozenge Making," page 32.

From the experience of the trade there exists a diversity of opinion as to the changing of the water in which they are kept; but as they occasionally, like the silkworm, change their skins, on this account alone it would seem necessary that it should be occasionally changed. The question arises what water should be used—rain, tank, or pond water. For aquariums, water which has become putrid and righted itself again, is recommended, and probably this would be the best for changing purposes, or else river or pond water, if available, as these would be sure to contain vegetable infusions and minute animalcules, or other animal juices to afford them sufficiency of nourishment. The leech, like many other animals, is very sensitive to atmospheric changes, and especially in regard to the electric modifications of the air, which has given rise to the leech being used for a "storm glass," as it becomes erratic in its evolutions before a storm; at other times it remains out of water for a considerable time, clusters together, and then again it will remain for days at the bottom of the water in a torpid state. The leech produces small eggs, which form into cocoons, from which, in due time, the living young make their appearance.

The best substance for packing leeches in is the peat of their natural ponds made into a stiff mud. Water containing tannin, tannic acid, lime, salt, or brackish water must be guarded against always; iron is not objectionable, but is an advantage in small quantities.

The custom of stripping and salting leeches, to cause them to disgorge after having been applied, has passed away, as many well-established cases have occurred in infectious diseases having been communicated on the application of the same leech to a second person.

A very popular error exists that a leech, when applied, takes only the bad blood (whatever that may be), and rejects the good; this is a mistake. With a leech blood is blood, be it cold blood of a fish or the warm blood of a human being, no matter how diseased that being may be. So long as blood is not tainted or putrid the leech will thrive on it.

The proprietor of a large breeding establishment, at the foot of the Hartz Mountains, when wishing to feed his leeches, was in the habit of hiring poor labourers, at six cents a day, to stand in the water for half an hour, nearly up to their thighs, that the leeches might obtain a full gorging of human blood. The wild leeches in Roumania are captured by means of men entering the water and allowing the wild leeches to fasten on their naked bodies. The leech-fishers then ship them off after reaching the shore.

The Valisneria Plant.—Correspondents of the *Ph. J.* give the following information:—"A mixture of sand, small stones, and shells is all that is required for the *ground* for the root. The plant should be placed lightly in and allowed to rest, and should not be rejected though apparently dead, as fresh shoots sometimes spring up when the leaves appear decayed. The valisneria does not appear to enjoy direct light, nor does it thrive in a dull corner. A good reflected light seems best suited for it, and the nearer to the open door of the shop the better. This, I think, is important."

Keeping Leeches.—Mr. A. W. Smith, *Ph. J.*, says he has kept leeches about sixteen years and usually has from thirty to eighty in stock. His loss has averaged three a month during the time. Keeps them in a two-gallon round glass aquarium with a perforated zinc top, with about two quarts of water in it and a few pebbles, sometimes a piece of valisneria, but not always, as he has not found it to be absolutely necessary. Used water supplied from waterworks; changed in warm weather once in ten days, and in colder weather once in three weeks. This aquarium is kept in a store room, on a shelf which is neither very dark nor very light. Prefers *larger* spotted leeches, and does not find any difficulty in keeping them healthy. Has known them to breed in a glass aquarium, and also in a fountain basin in his garden, and there they thrived with fish and water plants uncommonly well; they will, however, not do with fish in a *small* space, because the leeches fasten on the fish and exercise their peculiar function of blood-suckers, but where there is plenty of room the fish are not so much attacked by them.

1. Have healthy leeches and a clean glass aquarium to start with.
2. Use drinking water as pure as can be obtained.
3. Keep the aquarium where it can easily be seen when the water is cloudy.
4. Be careful that clean hands are always used when touching or changing the stock. [A small hand fish net would at all times be better than the hand.—Ed. *V. M.*]
5. Do not change the water too frequently.

"A Student" recommends to put a piece of metallic iron in, say the size of a walnut. Since adopting the above, he has not had one die for twelve months. The water only to be changed weekly.

Mr. W. E. Shrivell, *Ph. J.*, suggests to try *river* water for leeches; it must not be changed too often—about once in six weeks is quite enough. The water at first undergoes a kind of fermentation, but afterwards becomes quite clear and the leeches thrive in it.

"Hirudo," *Ph. J.*:—Put the leeches into strained rain water, in a glass receptacle, with some bits of iron (a chain is a very good thing), and stand it in a moderately lighted place with a good circulation of air. Frequently it is not moved for six weeks or more, and once the water had so diminished by evaporation that it was only one-fourth the proper quantity, nevertheless the leeches were vigorous and healthy.

Charles B. Allen, *Ph. J.*:—Keep the stock as low as possible; *never change the water unless it is absolutely necessary*, and, in cleaning, avoid, as much as possible, touching or disturbing them with the hands. If the water is discoloured (providing it is not with blood), there is not the slightest necessity for a change, as, often enough, such discolouration occurs immediately after cleaning. When the water begins to get turbid and to smell slightly, which happens in from four or five days to a month according to the season, it should be changed as gradually as possible, always remembering that the temperature of the water in your jar differs from that in the cistern or reservoir, and that a direct change from one to the other is prejudicial to the health of your stock. Put the jar under the tap, and let a small stream run, after a while it will become clean, often without the slightest disturbance to its inmates. In large aquariums it would be a source of constant fatality to introduce an instant change of water, at a different temperature, and, as a matter of fact, it is never attempted—the same body of water being used over and over again—oxygen being supplied by means of air forced in at different stages of its transit from tank to tank. The same broad rule is, I believe, applicable even to a leech jar.

J. Slade, *Ph. J.*, says :—Never change the water, unless obliged to do so, and always put the fresh arrivals into a jar of well-seasoned water ; I always keep a second vessel in hand, and find the longer it has been standing the healthier the leeches are. By putting them into fresh, spring, or other water you simply starve them ; the same holds good of changing the water. I, of course, at one time followed the beaten track and killed my leeches by the score ; now I rarely lose one.

Another correspondent remarks :—The more elaborate the aquarium the shorter lived were its contents. I have found this to be the case with regard to gold and other fish, as well as with leeches. I keep my leeches in a tin can, such as is used for carrying live fish, bait, &c., and may be bought for one shilling, with a piece of muslin under the cover to prevent them injuring themselves against the perforations of the lid, and keep the whole arrangements in the open air. I seldom lose one. It struck me that my success was perhaps due to the fact that the tin in which I keep them is more or less rusty.

Mr. R. Goodwin, Mumbray, writes, *Ph. J.* :—"The best thing to preserve leeches is the addition of about a teaspoonful of salt to five gallons of water ; during a very trying summer when all the leeches in the town were destroyed mine kept perfectly healthy."

Mr. Schwonder finds that by keeping leeches in a stoneware pot, filled, one-half, with pieces of peat, and three-fourths with water, in a room capable of being heated in winter, and at least one storey above the ground, they keep perfectly. The water need only be changed occasionally, say once in three weeks, and then the peat is to be washed with water. Mr. S. thinks that the success of keeping leeches depends upon their being preserved in a place elevated from the ground.—*Pharm. Zeit.*

J. A. Lamble, of Devonport, gives the following plan of treatment :—After trying several methods, adopted a plan, which consisted of a piece of perforated zinc, in the form of a half circle, with a rim of the same, to the depth of one inch, which was filled with earth, and small ferns placed in the same, with moss packed between to hide the earth and zinc. In the bottom of the aquarium was a layer of shingle and on this three stones about five or six inches in length, placed in such a position to support the zinc and its contents. Water was then poured in to just reach the zinc by a quarter of an inch. In a few days the rootlets of the ferns found their way through the perforated zinc, and touched the water ; I imagined that this kept the water good for the time mentioned. At this time I had little or no knowledge of leech breeding, and on going to the aquarium one day and on examining some of the ferns I was surprised to see something like a piece of wet sponge. I took it out and cut it open and found that it contained either four or six young leeches (I cannot quite recollect the exact number). We discovered several after this. I would also state that I have frequently noticed little insects darting about in the water, and at such times have found the leeches very healthy.

The best form of aquarium, says Mr. A. P. Baker, Norfolk Terrace, W., at any rate the most economical for leeches is the ordinary inverted bell-glass on a stand with any suitable covering. At the bottom there should be a layer of mud three or four inches deep, procured from the bottom of a clear pond or ditch. Over this should be some well washed gravel. By far the most satisfactory plant to grow is the *valisneria spiralis*, as, if well rooted, and not exposed to too much light, it thrives well, propagates, and keeps the water perpetually sweet. Otherwise, the ordinary weeds from any pond will answer the purpose, only as they will not stand the *forcing* incidental to their changed circumstances, they will require to be occasionally renewed. The water at present in the aquarium has not been changed for eighteen months, and, before that, was not changed for six years, a quart or so only being now and again added to replace loss by evaporation. The green on the side of the glass is a low form (conferva) of vegetable growth, which, though sometimes unsightly, aids in preserving the water.—*Ph. J.*

MANAGEMENT OF THE HAIR.

The harmful effects of too-frequent shampooing upon the growth of hair, and an explanation of its influence in causing baldness is being verified by experience. It is true that with the use of soaps and other detergents the scalp and hair may be thoroughly cleaned, but it is done at the expense of removing from them the fatty matter secreted by the sebaceous glands, upon the presence of which the health and vitality of the hair depends. A far better plan is the free use of a good, penetrating hair brush, one provided with two sets of bristles; long ones, which are relatively fewer in number and somewhat stiffer than the others; and short ones, which are softer in texture. The object of the long bristles is to detach the dandruff and dust from the scalp, while the shorter ones smooth and polish the hair, brush out the accumulated debris, and spread the fatty secretion along the hair from their roots to their extremities, which gives to the hair a beautiful gloss without the help of pomade.

Cure of Baldness.—Dr. G. Schmitz, of Cologne, in his ophthalmic practice, met with two cases in which the patients were bald, and found that after the use of subcutaneous injections of hydrochlorate of pilocarpine—with the object of causing absorption of inflammatory residue within the eye—the scalp rapidly became covered with young downy hairs. A man, sixty years of age, had his head covered in four months, partly with grey and partly with black hairs of considerable growth, so as quite to hide his previous baldness.

Professor Kaposi, in *Medical Record*, recommends the following:—Saponis viridis (German), alcoholis, of each 2 ozs.; solve, filtra et add ol. lavandula 20 or 30 drops. Pour one or two teaspoonfuls upon the scalp, then pour on a little water, rub smartly with the fingers, thus producing a copious lather. After four or five minutes shampooing this way, rinse the head with pure water and dry thoroughly with a towel. Then apply a little ozokerine or vaseline. This process causes the hair at first to fall out, but a new and fine growth of hair soon follows.

Mr. Hardy, in *Ann. de Thérap.*, gives the following as an effective application:—Suet 65, castor oil 25, gallic acid 2, ess. vanill. q.s.; make into a pomade.

Crystal Pomade.—White Castile soap 1 oz., alcohol (95°/$_0$) 12 ozs.; dissolve carefully in a water-bath, and add castor oil 4 ozs. Perfume, and fill into warmed bottles; let stand till cold before moving.

Dandruff Lotion.—Glycerin 7 ozs., tinct. capsicum 1 oz., eau de Cologne 22 ozs., water 23 ozs.

Fox's Cream.—Marrow pomade 2 ozs., ol. almonds 2 ozs. Melt, and add, while cooling, essence of tannin 2 drs., ess. bergam. 2 drs.

Naquet's Bismuthic Hair Dye.—Dissolve 100 pts. of bismuth in the smallest possible quantity of nitric acid (about 280 pts.). To this liquor add a solution of 75 pts. of tart. acid in water (3 pts. of acid to 5 of water), and then a rather considerable quantity of water to ensure complete precipitation. The whole is then thrown upon a filter, and the residue washed with water until the washings are no longer acid. The magma left on the filter is then put into a dish and a solution of ammonia gradually stirred in until all is dissolved. The magma derived from 1½ kilograms of bismuth will require 0·8 or 0·9 litre of ammonia. To this liquor is added 75 pts. of hyposulphite of soda in powder, and when the salt is dissolved the product is filtered and bottled. It is of advantage to add 1 or

2 per cent. of glycerine; no addition of alcohol is necessary. It contains about 5 per cent. of bismuth. It may be further diluted with water if desired.

Action: The hair, saturated with this liquid, acquires, after five or six hours, a deep chestnut colour. Upon washing the hair this colour disappears, giving place to a delicate flaxen colour. By repeating the operation daily a stage is arrived at, when, after passing through all the intermediate shades, the deep chestnut colour remains persistent.—*Ph. J., from Moniteur Scientifique.*

Bismuth Hair Dye.—(No. 1.) Citrate bismuth 1 oz., rose water 2 ozs., distil. water 2 ozs., alcohol 5 drs., ammonia q.s. (No. 2.) Hydrosulphate of soda 12 drs., distil. water 4 ozs. Each solution to be applied separately. No. 1 first, and No. 2 when this has thoroughly dried. The hair must be thoroughly freed from grease by shampooing liquid, then rubbed perfectly dry when it is ready to receive the dye.—*Scient. Amer.*

Growth of the Hair.—*The Oracle* recommends the following:—Take some fresh rosemary, strip from the stems two handfuls; boil this in a copper stewpan, with ½ lb. of vaseline, till reduced to 4 ozs. To this add a tablespoonful of bay rum, beating all up together with a silver fork for three-quarters of an hour. Perfume, and use once a day.

Liquid Hair Dye.—Dissolve 1 oz. of liquor-potassæ, as much freshly-precipitated oxide of lead as it will take up, and dilute the resulting clear solution with 3 ozs. of distilled water. This does not blacken the skin, but care should be taken not to wet the skin unnecessarily.

Turkish Hair Dye.—Finely powdered galls are made into a stiff paste with as much fatty oil as is necessary, and the mixture heated in an iron vessel until no more oily vapour is driven off. The mixture is then rubbed to a pap, with water (heated), and while still moist, so much finely powdered metal (iron and copper in equal parts) intimately mixed with it as to bring it to the consistence of an ointment. This is perfumed with ambergris, and kept in a damp place. It is said to keep the hair soft, glossy, and black for a long time, even after only a single application. The blackening property of the mixture is evidently due to the development of pyrogallic acid by the heating process.—*Phar. Zeitung.*

Black Brown Hair Dye.—Pyrogal. acid 1·4 gms., sol. sesquichlor. of iron 23 gms., copper chloride 25 gms. (easily prepared by dissolving copper carb. in hydrochlor. acid), rose water 70 gms.—*New Remedies.*

Blonde Dye.—Potass permanganate in 100 pts. of water; this produces a fine film of manganese dioxide (hydrated) on the hair, which produces a blonde colour.

Mrs. Allen's World's Hair Restorer.—Sulphur 5·6, lead acet. 8, glycerin 100, aromatic water 200 grms.— —*C. & D. Diary.*

Rossetter's Hair Regenerator.—Rose water 345, glycerine 50, milk of sulph. 2, sugar of lead 1·5 grms.—*Ibid.*

Erasmus Wilson's Tonic Dressing.—Eau de Cologne 2 ozs., tincture of canthar. ½ oz., expressed oil of mace 2 dr., ol. of nutmegs ½ dr., ol. lavand. 10 dps. A small portion to be rubbed into the scalp thrice a week; if found too stimulating, add 1 oz. of oil of sweet almonds and shake well before using.

BUSINESS ITEMS.

Hours of Business.—The following propositions, by B. W. Giles, are of the nature of axioms:—

1. "Hours of Business" will be influenced by the habits of the public, and cannot be regulated solely by the choice of the trader.

2. The habits of the public vary according to their circumstances of life, and will not be similar in all localities. A difficulty arises by this cause, which precludes the possibility of uniformity under all circumstances without involving public inconvenience.

3. Different service may be required from different trades—another cause of variation in hours of business. Thus the newspaper compositor's hours of labour are the journeyman hatter's hours of repose, and "the head of the bed for Mr. Box becomes the foot of the bed for Mr. Cox."

4. Pharmacies are properly expected to be available for urgent requirements *at all hours.*

5. Pharmacies, as a matter of fact, are commonly kept open for business during longer hours than other trades in the same localities. Question for consideration: Whether this last condition is a necessary (or even an expedient) arrangement for the fulfilment of the duties incumbent upon the pharmacist?

The hours of business are (speaking generally) fixed by the tradesman upon due consideration of the habits of the people to whom he looks for custom, and the amount of rest which is needed by those engaged in the business. There are certain hours in which the street traffic is sufficiently active to find occupation for the shop, and beyond those hours it is neither profitable to the tradesman nor necessary for the public accommodation that his shop should be open.

It is necessary to make careful separation between ordinary businesses and exceptional or emergency business. For the latter no limits can be fixed, and it can only be provided for by the constant attendance of a competent person to answer such calls whenever they occur. This, therefore, has no connection with the determination of "the hours of business."

Liability of Stamped Cough Lozenge.—The trade are indebted to J. B. Shillcock & Son, Pharmaceutical Chemists, of Bromley, Kent, for the settlement of this important question. It is now authoritatively stated that lozenges stamped "Shillcock's Cough Lozenge," even though unaccompanied with any handbill recommendatory of their efficacy, are liable to the stamp duty, but the same lozenges stamped "Cough Lozenge, Shillcock, Bromley," are not subject to the stamp act.

S. G. D. G.—The letters stand for *Sans Guarantie du Government*, and are always prefixed to French patents, signifying "not guaranteed by Government." The French law requires these letters to be attached in all cases. It must not, says the *Chemist and Druggist*, be assumed that other governments, which do not insist on such a caution, are therefore to be held responsible for all the strange ideas patented within their realms.

Plate Licence for Smelling Bottles.—A. B. (Hertford) writes, *Phar. Jour.* :—" That silver capped bottles are exempt if under 5 dwt.; gold, do., if under 2 dwt. of metal."

Patent Medicine Licences.—Chemists keeping more than one shop are required to take out only one licence for the sale of patent medicines.—*Ph. J.*

A chemist's business may be carried on for the benefit of the widow or children by the executors, administrators, or trustees, provided that they employ a fully qualified assistant. But as their office ceases to exist when the estate is wound up, and as they may desire to close their responsibilities as early as possible, it is wise to leave the business in trust to the wife. She can then legally retain possession of the business as long as she pleases.—*C. & D.*

The title "Pharmaceutical Chemist" only is the exclusive property of gentlemen who have passed the major examination of the Pharmaceutical Society, but we should judge that the law would deem the assumption of the designation " Pharmaceutic Chemist" a colourable imitation of the original sufficiently dishonest to be prevented. The title " Pharmacist" and " Pharmaceutist" are open to other chemists and druggists.—*C. & D.*

A person having served an apprenticeship to a chemist may walk the hospitals and become a medical practitioner; but no person can legally practice as an apothecary unless he has served an apprenticeship to an apothecary.—*Ph. J.*

METRIC WEIGHTS AND MEASURES

ARE expressly legalised by the Weights and Measures' Act, 1878, and the subjoined table gives the exact equivalent of British weights and measures with those of the principal ones of the metric system.

The *metre* is a French standard, and was supposed to be the ten-millionth part of the distance from the Pole to the Equator. All the other weights and measures are derived from this.

MEASURE OF LENGTH:

	Yard.	Feet.	Inches.
Millimetre	0	0	0·0394
Centimetre	0	0	0·3937
Metre	1	0	3·3708
Kilometre (1,000 metres)	10,936	0	11·9

A centimetre is rather more than the third of an inch; a metre is 1 yard and 3½ inches; a kilometre is about three-fifths of a mile; 8 kilometres are about equal to 5 miles.

WEIGHTS:

The *gram* is the weight of water at its maximum density (4·44°C.), filling a cubic centimetre.

	Pounds.	Ozs.	Grains.
Milligram	0	0	·015
Centigram	0	0	·154
Gram	0	0	15·432
Kilogram	2	3	112·907

—*C. & D. Diary.*

The weights and measures used in this country, compared with those of the United States and on the Continent:—

The United States Pharmacopœia orders the *troy* weight, and employs only the troy ounce of 480 gr. and the grain. The troy ounce equals the avoirdupois ounce and 42·5 grains. The U.S.P. uses measures of the same name as the B.P., but they are different in value. The U.S. pint of 16 fl. oz. weighs 291·2 grains, avoirdupois, of distilled water at 60° F., whilst the British imperial pint weighs 20 ozs. avoirdupois, of distilled water at 60° F. The U.S. fluid ounce, which admits of the same divisions as the British fluid ounce, differs only from that in capacity to the extent that it weighs 18·2 grains more of distilled water at 60° F.

The metrical weights and measures of the Continental States of Europe, as compared with English weights, are for—

1 Gram	15·432 grains.
1 Litre	35·2754 fluid ounces.
1 Metre	39·37079 inches.

The gram has its decimal multiples—kilogram, hectogram, and decagram; and divisions—decigram, centigram, and milligram. The litre and metre have their corresponding decimal divisions—decilitre, centilitre, and millilitre, and decimetre, centimetre, and millimetre.

In Continental States where this system is now generally adopted for the dispensing and preparing of medicines all liquids are weighed, and the terms gram, centigram, and kilogram only are used. They avoid the possibility of errors which the similarity of names decagram and decigram might lead to.—*Phar. of Hosp. for Diseases of the Throat.*

Relative weight of the B.P. to the metric weights—

1 lb. = 453·5925 grams.
1 oz. = 28·3425 ,,
1 gr. = 0·0648 ,,

Divisions of the avoirdupois ounce—

54½ grains is one-eighth of oz.
18 grains is one-twenty-fourth of oz.

A grain measure is the volume of a grain (by weight) of distilled water. Thus 100 grain-measures of sulphuric acid is a quantity, by measure, equal to 100 grains, by weight, of distilled water.—*Ph. J.*

Mr. Oscar Oldberg, Phar. D., Philadelphia, in his "Unofficial Pharmacopœia," gives the following:—The metre is equal to 39,370,432 inches, or about 10 per cent. longer than the yard. The metric unit of fluid measure is the litre, the cube of one-tenth metre (one decimetre), or 1,000 cubic-centimetres. *

The litre is equal to about 34 fluid ounces.

The cubic-centimetre is equal to 16·231 minims.

The metric unit of weight is the gram, which represents the weight of one cubic-centimetre of water at its maximum density.

The gram is equal to 15·4324874 troy grains.

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* Mr. A. B. Taylor, of Philadelphia, has proposed the term "Fluigram" in place of cubic-centimetre as being more convenient, euphonious, and American, and Dr. Oscar Oldberg has adopted it throughout his "Unofficial Pharmacopœia."

For all practical purposes it is always sufficiently accurate and safe to consider 1 gram exactly equal to 15 grains troy, and 1 cubic-centimetre as exactly equal to 15 min., and the fractions over 15 may be ignored.

The actual excess of 1 gram over 15 troy grains amounts to less than 3 grains for every 100 gr., and the excess of 1 cubic-centimetre over 15 min. amounts to 8½ min. for every 100 min.

RULES OF CONVERSION.

To convert troy grains into grams or minims, or minims into fluigrams (cubic-centimetres).

A.—Divide by 10, and from the quotient subtract one-third.

Ex.—To convert 60 gr. into its equivalent in grams divide the number by 10, which gives 6 as the quotient; from the 6 subtract one-third (2) which leaves 4 as the answer, 4 grams being equivalent to 60 gr. Or

B.—Divide by 15.

To convert apothecaries' (troy) drachms into grams, or fluid drachms into fluigrams, multiply by 4.

To convert grams into grains, or fluigrams into minims, add 50 per cent. (one-half), and multiply the sum by 10.

Ex.—To 12 grams add 50 per cent (6) which gives 18; multiply this by 10 which gives 180 as the number of gr. equal to 12 grams.

To convert grams into drachms, or fluigrams into fluid drachms, divide by 4.

When whole troy ounces or fluid ounces are concerned, 30 is the multiplicator or divisor to use.

To convert troy ounces (or fluid ounces) into grams (or fluigrams) multiply by 30.

To convert grams (or fluigrams) into troy ounces (or fluid ounces) divide by 30.

The following are approximate equivalents :—

1 troy gram (or minim) is equal to 0·06 gram (or fluigram) or 6 centimetres.

1 drachm (or fluidrachm) is equal to 4 grams (or fluigrams).

1 ounce (or fluid ounce) is equal to 30 grams (or fluigrams).

1 gram (or fluigram) is equal to 15 gr. (or minims).

4 grams (or fluigrams) is equal to 1 drachm (or fluid drachm).

30 grams (or fluigrams) is equal to 1 ounce (or fluid ounce).—*Unofficial Phar.*

SYNOPTICAL TABLE OF THE PHARMACOPŒIAL PREPARATIONS.

Mr. R. Reynolds, F.C.S., of Leeds, in his Presidential Address at the eighteenth annual meeting of the British Pharmaceutical Conference, speaking of the changes which have taken place in the *Pharmacopœia* since 1639, remarked that "in 1824 the *London Pharmacopœia* was the guide for the chemists and druggists in England, and it was interesting to study in a tabular form a synoptical list of its preparations, comparing some of the groups with those corresponding to them in earlier and later pharmacopœias, and observing in what direction change has been made." In this *Pharmacopœia* the table shows a small increase in the number of preparations as compared with its predecessor of 1788. If we take those which are readily thrown into groups, the comparison stands as 307 in 1824 against 267 in 1788, the increase occurred chiefly in the groups of decoctions (from 10 to 15); extracts (from 14 to 23); and especially infusions (from 4 to 18).

From 1677 to 1788, passing over the *L.P.* of 1721 and 1746, which appeared in the interval, ointments, electuaries and pills were more numerous than in the *Pharmacopœia* of the eighteenth century, but the grand idea of 1677 seems to have been plasters. These seventeenth century apothecaries, judged by the weapons, were emphatically men of plasters, for their *Pharmacopœia* had 47 formulæ for these preparations.

From 1788 a constructive policy prevailed, and the preparations of the *Pharmacopœia* once more began to increase in number. In the edition of 1836 the same rule existed, and the table indicates how much higher the tide had risen in 1867, when the *B.P.* showed an increase of 70 per. cent. in grouped preparations as compared with 1788.

	P.L. 1639	P.L. 1677	P.L. 1788	P.L. 1824	P.L. 1836	B.P. 1867
Acids	—	—	6	8	11	22
Waters	—	—	9	10	28	13
Ointments and Cerates...	52	28	22	24	33	34
Confections and Electuaries	24	18	13	11	11	8
Decoctions	—	—	10	15	23	14
Plasters	38	47	13	12	12	14
Extracts and Liquid Extracts..................	—	—	14	23	28	36
Infusions	—	—	4	18	24	28
Iron, Preparation of	—	—	4	4	5	14
Honeys	—	—	3	3	2	2
Liniments	—	—	3	8	9	16
Liquors	—	—	12	14	16	27
Mercury, Preparations of	—	—	11	9	12	8
Mixtures	—	—	3	—	12	11
Oils..........................	—	—	23	18	15	30
Oxymels......	—	—	4	2	2	2
Pills	36	30	6	9	15	20
Potassium, Preparations of	—	—	8	9	11	14
Powders (Compound) ...	—	—	19	12	10	13
Sodium, Preparations of	—	—	3	5	5	11
Spirits	—	—	20	23	17	15
Syrups	—	—	15	14	14	17
Tinctures	—	—	36	40	48	65
Wines...	—	—	6	7	6	10
			267	307	369	454

The *L.P.* of 1677 gives us a picture of the materia medica. When Charles II. was king, poly-pharmacy flourished with a brave show. The doctrine that every herb was given to man for the purpose of either food or physic was here exemplified. Thirty or forty ingredients were thought necessary for some of the most trivial preparations. Its "catalogus simplicium" was a list of about 1,500 substances, of which it is almost incredible that more than 200 were derived from animals.

Our generalizations from the table are simple, and would fix its attention chiefly on the remedies that were conspicuous for their absence, as quinine, morphia, and iodide and bromide of potassium. These were about to appear on the scene, for the *L.P.* of 1836 contained disulphate of quinine, acetate and hydrochlorate of morphia, strychnia, veratria, iodide and bromide of potassium. Philips states that the two latter salts were first used in medicine by Dr. Williams, of St. Thomas' Hospital, and he quotes the dose of bromide as from 3 to 10 grs.

Reformed pharmacy was well established a hundred years ago, and that the number of preparations was at low water mark in 1788; as a consequence of this policy of reform, Gray says in 1823, "Formerly the list of drugs kept in the shops amounted to about 2,000, or full ten times as many as at present, and the preparations were equally numerous." Of the pharmaceutical preparations in use fifty years ago, it is not without interest to notice the changes in the money value of some drugs that have occurred during this period. Some old stock-books for the years between 1827 and 1831 have supplied the cost prices which were then current: The following may be quoted :—

		s.	d.	
Citric Acid	18s. to	10	6	per lb.
Oxalic Acid		2	6	,,
Tartaric Acid		2	9	,,
Camphor		2	10	,,
Calomel		4	3	,,
Calumba Root		5	0	,,
Gentian Root		1	0	,,
Castor Oil	3s. (1827) to	1	8	,, (1831)
Cantharides		10	0	,,
Powdered Nux Vomica		4	0	,,
Chia Turpentine		4	8	,,
Sarsaparilla, cut		5	0	,,
Ergot of Rye		3	0	per oz.
Seidlitz Powders	Sell	4	6	per box.
White Demy Paper		20	0	per ream.
Draught Phials		18	0	per gross.
Flint Glass		2	0	per lb.

Trade Statistics.—There are about 14,000 drug stores in the United States, and the number of persons employed in the various branches of the drug business is estimated at 130,000.

According to the *Chemist & Druggist* there are 1,420 chemists' shops in London and suburbs. According to the census of 1881 the population was 4,764,312. That gives one shop to every 3,355 persons.

The total number of chemists on the register is 13,655, but not more than 10,000 are in business—probably not more than 9,000 in Great Britain, the population of which is about 30,000,000. This would give one pharmacy to every 3,000. Thus there appears to be more pharmacies in proportion to population in the provinces than in London.

There are, according to this year's returns, 2,445 pharmacists in Prussia, and the population being estimated at 25,772,562, the proportion would be one chemist to 10,584.

Austria shows a similar proportion.

In Paris, according to the *Jour. de Pharm. et de Chemie*, there are 748 pharmacies in a population of 2,200,000. That allocates 2,941 persons to each pharmacy. There are, in Paris, besides, 558 herboristes.

In Italy the proportion is given as one to 2,500.

FINIS.

WELLCOME LIBRARY INSTITUTE

The following is the Revised List of Dispensing Charges recommended by the Council of the Manchester Chemists' and Druggists' Association, 1880.

THE Prices on the following page include ordinary Bottles and Pots. When the Retail Price of the ingredients used in dispensing a prescription comes to about that indicated in the list,* an extra charge should be made for dispensing, say 3d. per dozen for pills, and 6d. to 1/0 for mixtures. Where *two* prices are quoted for small numbers of pills or powders, it is intended that the higher be charged when these medicines are ordered *alone*, and the lower when they are prescribed with a mixture, &c., on the same prescription; the principle being that no prescription should be dispensed for less than 1/0.

In cases where the circumstances of patients, or the extreme simplicity of formulæ, render some variation from the Price List desirable, the prescription should be marked with a small X below the price mark, indicating "exceptional."

It is particularly requested that in all cases the first dispenser will mark the prescription, and, in case of repetition, adhere strictly to the price previously marked.

The Public should be given to understand, when necessary, that dispensing being skilled labour of a high class, and involving the gravest responsibility, the mere retail price of the ingredients in a prescription would be very inadequate remuneration to the competent dispenser.

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* Issued by the *Manchester Chemists and Druggists' Association*, 1880.

REVISED LIST OF DISPENSING CHARGES.

PILLS.

1 to 12	6d. to 1/0
16	1/3
18 to 24	1/6
30	1/9
36	2/0
48	2/6

72 and upwards, 6d. per doz.

SILVERING

3d. per doz. extra.

POWDERS.

1 to 4	6d. to 1/0
6	1/0

12 and upwards, 1/6 per doz. if simple, or 2/0 if mixed.

POWDERS FOR EFFERVESCING MIXTURES.

6, 8d.; 12, 1/0.

POWDERS IN BULK.

8d. to 1/0 per oz. exclusive of bot.

MIXTURES.

	DOSE.		
	1 oz.	½ oz.	1 & 2 drms.
1 oz.	1/0	1/0	1/0
1½ oz.	1/0	1/0	1/0
2 oz.	1/0	1/2	1/4
3 oz.	1/2	1/4	1/6
4 oz.	1/4	1/6	1/8
6 oz.	1/6	1/8	2/0
8 oz.	1/8	2/0	2/6
10 oz.	2/0	2/6	—
12 oz.	2/6	3/0	—
16 oz.	3/0	3/6	—
20 oz.	3/6	4/0	—

Acid Mixtures taken with others half above prices.

LOTIONS, INJECTIONS, AND GARGLES.

1 to 3 oz.	1/0
4 oz.	1/2
6 oz.	1/4
8 oz.	1/6
10 oz. 12 oz.	2/0
16 oz.	2/3
20 oz.	2/6

LOTION POWDERS.

1 or 2, 6d. to	1/0
3	1/6
6	2/0
12	3/0

DROPS.

CONCENTRATED MEDICINES AND TINCTURES.

¼ oz. to 1 oz.,	1/0
1½ oz.	1/6
2 oz.	1/9
3 oz.	2/6
4 oz.	3/0

Stoppered Bottles charged extra.

OINTMENTS & ELECTUARIES.

¼ oz. to 1 oz.	1/0
1½ oz. 2 oz.	1/6
3 oz.	2/0
4 oz.	2/6

SUPPOSITORIES—3/0 per doz.

PESSARIES & BOUGIES,

4/0 per doz.

Not less than 1/0 for any quantity.

LINIMENTS.

1 oz.	1/0	
1½ oz.	1/4	
2 oz.	1/6	
3 oz.	2/0	
4 oz.	2/6	

Larger quantities 6d. per oz.

Liniment Aconiti, Bellad., Chlorof., Croton., Iodi, 1s. oz.; 4 ozs. 10d. oz.

Lin. Pot. Iod. c. Sapone, 8d. oz.

„ Sinap. Co., 1/6 oz.

PLASTERS AND BLISTERS.

3 × 4 in. 4 × 4 in. 4 × 6 in.	1/0
5 × 8 in.	1/3
6 × 6 in.	1/6
6 × 12 in.	2/0

BELLADONNA or OPIUM, 33 % extra.

Adhesive Margin, 25 % extra.

PRIVATE MARK—

M	E	L	B	O	R	A	C	I	S
1	2	3	4	5	6	7	8	9	10

To be used thus, "m/c" (signifying 1/8) under the stamp of the first dispenser.

NATURAL MINERAL WATERS.

The sizes hitherto called Quarts and Pints are here called Bottles and Half Bottles, as by "The Weights and Measures Act, 1878," *those terms are restricted to Imperial Measure.*

Apollinaris	half bottles	6s. doz.
,,	bottles	8s. ,,
Carlsbad	,,	1s. 3d. each.
Congress, Saratoga	,,	1s. 6d. ,,
Ems	,,	1s. ,,
Friedrichshall	,,	16s. doz. 1s. 6d. each.
Harrogate	,,	10s. doz.
Hunyadi Janos	,,	2s. each.
Kissingen	,,	1s. 6d. each.
Kreuznach	,,	1s. 6d. ,,
,, Motherlye	half bottles	1s. 3d. ,,
Marienbad	bottles	1s. ,,
Pullna	,,	1s. 6d. ,,
,,	half bottles	1s. ,,
Pyrmont	bottles	1s. 9d. ,,
Seltzer	,,	8s. doz.
,,	half bottles	6s. ,,
Vals	bottles	1s. each.
Vichy	,,	1s. ,,
Woodhall	,,	1s. ,,
,, Motherlye	,,	2s. 6d. each.

SALTS.

Carlsbad	¼ lb. 3s., ½ lb. 5s. 6d., 1 lb. 10s. 6d.
Marienbad	¼ lb. 3s. 6d.
Kreuznach (for Baths)	1 lb. 1s. 6d., 7 lb. 8s.
Vichy	bottles or boxes, 6s. each.
,, Pastilles	1s. and 1s. 6d. boxes.
Ems ,,	1s. 6d. ,,
Carlsbad ,,	1s. 6d. ,,

Regulations required by the Pharmacy Act, 1868, to be observed in selling by Retail, and in Dispensing

POISONS.

All the Articles named or referred to in the appended List, both in Part 1 and Part 2, are POISONS within the meaning of the Pharmacy Act, 1868.

SALE BY RETAIL.

I.—Relating to Part 1 and Part 2 of the List.

It is unlawful to sell any "POISON" by retail, unless the vessel, wrapper, or cover in which it is contained, be distinctly labelled with the *name of the article*, the word "*Poison*," and the *name and address of the seller. This applies to all the articles in both Parts of the List.*

II.—Relating to Part 1 only.

It is unlawful to sell, by retail, any poison included in PART 1 of the List, to any person unknown to the seller, unless introduced by some person known to the seller: and on every sale of any such article, the seller shall, before delivery, make or cause to be made an entry in a book to be kept for that purpose, of

1. The date of sale;
2. The name and address of the purchaser;
3. The name and quantity of the article sold; and
4. The purpose for which it is stated to be required;

to which the signature of the purchaser, and of the person, if any, who introduced him, shall be affixed. *The article must also be labelled with the name of the article, the word "Poison," and the name and address o the seller.*

III.—Relating only to Arsenic and its Preparations.

It is unlawful to sell Arsenic or any of its preparations, unless, in addition to all the foregoing regulations, the following provisions of the Arsenic Act be also observed:—

1. That the poison, if colourless, be mixed with soot or indigo, so as to colour it.
2. That the person to whom the poison is sold or delivered be of mature age.
3. That the occupation, as well as the name and address of the purchaser, be entered in the poison-book.
4. That when the purchaser is not known to the seller, and is introduced by some person known to both, this person shall be present as a witness to the transaction and shall enter his name and address in the poison-book.

DISPENSING.

None of the foregoing regulations apply to any article when forming part of the ingredients of any medicine dispensed by a Registered Chemist and Druggist; but it is necessary, if a medicine contain a poison included in Part 1 or Part 2 of the List, that the ingredients of the medicine, together with the name of the person to whom it is sold or delivered, be entered in a book kept for that purpose *(Prescription Book)*, and that the name and address of the seller be attached to the medicine.

List of Poisons within the meaning of the Act.

PART 1.

Not to be sold unless
the purchaser is known to,
or
is introduced by some person known to, the seller;
ALSO

Entry to be made in Poison-Book
of

1. *Date of sale;*
2. *Name and address of purchaser;*
3. *Name and quantity of article;*
4. *Purpose for which it is wanted;*

attested by signature;
AND

Must be labelled with

1. *Name of article;*
2. *The word "Poison;"*
3. *Name and address of seller.*

Arsenic, and its preparations. *(For special regulations see preceding page).*

Aconite, and its preparations;

Alkaloids:—All poisonous vegetable alkaloids and their salts;

Atropine, and its preparations;

Cantharides;

Corrosive Sublimate;

Cyanide of Potassium, and all metallic cyanides and their preparations;

Emetic Tartar;

Ergot of Rye, and its preparations;

Prussic Acid, and its preparations;

Savin, and its oil;

Strychnine, and its preparations;

Vermin Killers, if preparations of poisons the preparations of which are in Part I of this Schedule.

PART 2.

Must be labelled with

1. *Name of article;*
2. *The word "Poison;"*
3. *Name and address of seller.*

Almonds, Essential Oil of *(unless deprived of Prussic Acid);*

Belladonna, and its preparations;

Cantharides, Tincture and all vesicating liquid preparations of;

Chloral Hydrate, and its preparations;

Chloroform;

Corrosive Sublimate, preparations of;

Morphia, preparations of;

Opium, and its preparations; and preparations of Poppies;

Oxalic Acid;

Precipitate, Red (Red Ox. of Mercury);

Precipitate, White (Ammon. Mercury);

Vermin Killers (see Part I). Compounds containing "Poisons," prepared for the destruction of vermin, if not subject to the provisions of Part I are in Part 2.

B.N.—It is recommended that the minimum charge for the sale of a Poison requiring Registration be 6d.

NEW IMPROVEMENTS IN PHARMACY.

THE BURROUGHS BEEF AND IRON WINE.

"This is a really valuable preparation, and, as far as we know, a novelty. It contains beef-juice and citrate of iron in solution in wine, and is therefore a very powerful and rapidly-acting tonic. Children, as well as adults, take it easily; and, as its taste is by no means unpleasant, it can hardly fail to attain great popularity. In many cases of scrofula and rickets we have given it with the most gratifying results."—THE LANCET Report.

For full Notes and Reports, see front pages of THE LANCET, *May 6th.*

HAZELINE.

THE MEDICAL PRESS AND CIRCULAR reports:—"HAZELINE is a valuable astringent remedy, wonderfully efficacious in checking *internal* or *external hæmorrhages*, and for *allaying inflammation.* It is particularly valuable in the treatment of *bleeding piles*, and as a *surgical dressing* it deserves attention." *For full Notes and Reports, see front pages of* THE LANCET, *May 6th.*

KEPLER EXTRACT OF MALT.

THE LANCET says of the KEPLER EXTRACT OF MALT:—"The best known, and in this country the largest used Extract of Malt. It is as distinct an advance in therapeutics as was the introduction of cod liver oil. Extract of Malt is one of our best remedies for atonic dyspepsia, and is undoubtedly useful in consumption and other wasting diseases." And further adds, "It is very good, and may be used with confidence."

For Wasting Diseases.

For full Notes and Reports, see front pages of THE LANCET, *May 6th.*

McK. & R. CAPSULED PILLS.

AN important improvement has been made, which now renders the most offensive and repulsive drugs easy of administration. This improvement consists in perfectly sealing with a thin transparent capsule of gelatine all drugs such as quinine, morphia, rhubarb, &c., also the various pills and powders of the Pharmacopœia. These capsules are of an ovoid shape, and it has been demonstrated beyond question that when ordinary coated pills are rejected by patients there is not the slightest difficulty in administering this new form.

For full Notes and Reports, see front pages of THE LANCET, *May 6th.*

THE WYETH COMPRESSED TABLETS.

EXACT SIZE OF TABLET.

"ARE a great improvement on the hard, unpalatable lozenges which have so long done duty in the Pharmacopœia. The Chlorate of Potash and Chlorate of Potash and Borax are used in throat affections, whilst the Bicarbonate of Potash and Bicarbonate of Soda Tablets are efficacious in dyspepsia. The Soda Mint, or Neutralising Tablets, will earn the gratitude of many a flatulent dyspeptic."—THE LANCET.

For full Notes and Reports, see front pages of THE LANCET, *May 6th.*

BURROUGHS, WELLCOME & CO., Manufacturing Chemists,
7, SNOW HILL, LONDON, E.C.

IMPROVED GOLD MEDAL

SODA WATER MACHINERY.

NEW CATALOGUE FOR 1882 & 1883 NOW READY.
The most complete in the Trade.

Ice Drink Fountains. Soda Water Machinery.

Outfits of various Sizes, Styles & Prices. Catalogues (Illustrated) & Price Lists Post Free.

MESSRS. DOWS, CLARK & CO.,

Of 46 & 47, FRITH STREET, *LONDON.*

Mineral ✢ Waters

MAKE ONE TRIAL, AND YOU WILL BE CONVINCED THEY ARE THE BEST MANUFACTURED.

For these Waters, the Vienna Exhibition Gold Medal of 1873 was awarded, in competition with Aerated Waters exhibited from all parts of the World.

- **Ginger Ale** *(Superior)*
- **Lemonade** *(Best Quality)*
- **Champagne Cup** *(Specialty)*
- **Gingerade** *(Pure Ginger)*
- **Limeade** *(Patented)*
- **Aerated Apple Juice** *(Pure)*
- **Quinine Tonic**
- **Soda Water**
- **Seltzer Water**
- **Brighton Seltzer**
- **Potass Water**
- **Vichy Water, &c., &c.**

Gold Medal The only Gold Medal awarded at the Vienna Exhibition for Improvements in Mineral Waters and Soda Water Machinery, in competition with Manufacturers from all parts of the world, was conferred upon ◆◆◆◆◆◆

Messrs. DOWS, CLARK & STOKES,

14, ✶ SMART'S ✶ BUILDINGS, ✶ HIGH ✶ HOLBORN,
LONDON.

SIDNEY BROWN'S

LATEST NOVELTIES IN

PERFUMERY.

THE SUSPENDING CASE (Registered).

No. 1 CASE @ 8/0.
Contains 6 Corked Perfumes and 6 Tap Sprinklers.

No. 2 CASE @ 8/0.
Contains 1 dozen Sprinklers.

No. 3 CASE @ 8/0.
Contains 1 dozen 1 oz. stoppered Perfumes.

S. B.'S ORIGINAL
QUI VIVE PERFUME,
Containing Dancing Figures,
8/0 per dozen.

FULLER'S EARTH.

1d.	Packets	per gross	4/8
2d.	,, ...	,,	9/6
3d.	,, ...	,,	14/0
4d.	Round Boxes ..	per doz.	1/0
6d.	,, ..	,,	2/0
1/0	,, ..	,,	3/6

S. B.'s Original
GLYCERINE JELLY, 4/0, 8/0
PER DOZ.

S. B.'s Philoderma, 12/0.
PER DOZ.

VIOLET POWDER, in Packets,
1d., 2d., 3d., 4d., 6d., and 1/0.

PREPARED PUMICE STONE for the Toilet, 3/6 per doz.

No. 15.—POSTAL PERFUMES, 4/0 per doz.

No. 38.—PERFUMES, 8/0 per doz.

Packed in Outers containing Four Boxes.

POMADES.
4/0 and 8/0 per doz.

COSMETIQUES,
From 1/4 to 7/0 per doz.

LIME JUICE
AND
GLYCERINE,
3/9 and 7/0 per doz.

SATIN SACHETS,
4/0 and 8/0 per doz.

SEIDLITZ
POWDERS,
Pure and Full Weight.

SODA WATER
POWDERS.

LEMONADE
POWDERS.
GINGER BEER
POWDERS.

GAZOGENE
POWDERS.
SELTZOGENE
POWDERS.

FLAVOURING ESSENCES,
In great variety, at 4/0 and 8/0 per doz.
May be had packed in the Registered Suspending Case.

S. B.'S CELERY SALT
Has the freshness of New Celery and will retain it for years, 3/0, 5/6, and 7/0 per doz.

SPECIAL QUOTATIONS TO WHOLESALE BUYERS.

SIDNEY BROWN, Manufacturing Perfumer,
8, BLACKFRIARS ROAD, S.E.

THREE GOLD MEDALS, 1880-81-82.
AWARD OF MERIT, INTERNATIONAL MEDICAL EXHIBITION, LONDON, 1881.

TRADE **MALTINE** MARK.

EXTRACT OF MALTED BARLEY, WHEAT, AND OATS.

The Original and Only Preparation composed of these three Cereals.

Contains nearly Ten times more of the nutritive elements than any Alcoholic Extract of Malt.

MALTINE increases both weight and flesh in persons of thin habit.

MALTINE is particularly recommended for delicate females, and debilitated Children and Infants.

MALTINE is specially recommended for deficient Lactation.

MALTINE prevents constipation.

MALTINE is entirely free from all products of fermentation, such as alcoholic and carbonic acid gas.

MALTINE is very palatable and pleasant, and will be readily taken by the youngest child.

AS AN ARTICLE OF DIET IN ALL CASES

Of Consumption and Wasting Diseases.

MALTINE with PEPTONES.—In Fevers, Phthisis, Pulmonary Affections, and all Wasting Diseases.

MALTINE with Cod-Liver Oil.—The most perfect emulsion and most agreeable.

MALTINE with Cod-Liver Oil and Pancreatine can be given with advantage in all cases of Dyspepsia.

MALTINE with Cod-Liver Oil and Phosphates.—Most efficient in Phthisis.

MALTINE with Hypophosphites.—In Consumption, Rickets, and deficient Ossification.

MALTINE with Phosphates. — Most important results can be obtained.

MALTO-YERBINE.—A substitute for Cod-Liver Oil in Wasting Diseases, Coughs, and Colds.

Of Indigestion, General Debility, &c.

MALTINE with Pepsine and Pancreatine.—One of the most effective combinations in Dyspepsia, &c.

MALTINE WINE with Pepsine and Pancreatine.—Valuable when the system needs invigorating and replenishing. A perfect remedy for *vomiting in pregnancy*, Cholera Infantum, and Wasting Diseases of Children.

MALTINE WINE.—This is lighter and more acceptable to some stomachs.

MALTINE with Beef and Iron.—One of the most valuable combinations in cases of General Debility.

MALTINE with Phos. Iron, Quinia, and Strychnia.—A powerful, nutritive, general, and nervous tonic.

MALTINE with Phosphates Iron and Quinia.—A powerful, general, and nutritive tonic.

MALTINE Ferrated.—Is specially indicated in Anæmia and Chlorosis, where Iron is deficient in the system.

OF IMPURITIES OF THE BLOOD.

MALTINE with Alteratives.—MALTINE is here combined with alteratives of known efficacy, such as Iodides, Bromides, and Chlorides.

MALTINE and COMPOUNDS, in Bottles containing 8 and 16 fluid ounces, equal in weight to 12 and 24 ounces, 2/9 and 4/6. The Compounds, 3/6 and 6/6; in Winchester Quarts, 120 ounces weight, 20/0 and 29/0.

CAUTION.—Examine each Bottle and see that the Capsule is marked "The Maltine Manufacturing Company, Limited."

THE MALTINE MANUFACTURING COMPANY,
LIMITED,
24 and 25, Hart Street, Bloomsbury, London, W.C.

FOR SICK ROOMS.—A few drops should be frequently sprinkled about the bedclothes, also on the floor, carpets, &c., of the apartment.

AS A MOUTH-WASH.—A teaspoonful in half a tumblerful of water will sweeten the Breath, and, if applied with a tooth brush in the ordinary manner, it will materially prevent the formation of tartar on the Teeth.

AS A HAIR WASH.—Two Table-spoonfuls in a bowl of water will eradicate Scurf and materially assist in cleansing the Hair.

FOR HANDKERCHIEFS.—A few drops sprinkled thereon will prove beneficial for preventing infection.

FOR USE IN THE SICK ROOM.

"A powerful and safe Disinfectant, and a most Refreshing Perfume."

MASON'S

Perfumed Solution of

CARBOLIC ACID

For Preventing Infection from Small Pox, Cholera, Fevers, and other Contagious Diseases.

Prepared with the Special Sanction and Approval of F. C. CALVERT & Co., by

H. C. MASON,
1 & 2, AUSTRALIAN AVENUE,
LONDON, E.C.

TRADE MARK.

This Solution acts powerfully and instantaneously as a Disinfectant, preventing the spread of contagious diseases, and affording a very refreshing and agreeable Perfume.

PRICE 1/0 & 2/6

Observe fac-simile of Signature and Trade Mark on the Label of each Bottle.

"For Whitening and Beautifying the Teeth."

ODORINE.

(A Fragrant Carbolic Mouth-Wash.)

CLEANSES the Teeth from all impurities, removes and prevents tartar and and all discolour, whitens and preserves the teeth, and sweetens the breath; may be used either as a Dentifrice, with the tooth brush in the ordinary way, or as a Mouth-Wash, with the greatest advantage. It instantly removes all unpleasant odour from the breath, whether arising from decayed teeth, or from any other cause—and for smokers it is the most efficient and agreeable preparation ever introduced—if the mouth, after a Cigar or Tobacco, be rinsed with a solution of Odorine in water, all trace of the smoking will be destroyed—the mouth rendered perfectly sweet—and a delightful fragrance imparted to the breath.

If a few drops of the *Odorine* on the tooth brush (previously moistened in water) be used to brush the Teeth in the ordinary manner, a very agreeable *Froth* will be produced, which thoroughly cleanses the interstices of the Teeth and leaves a most refreshing sensation in the mouth.

PREPARED BY

H C. MASON, 1 & 2, Australian Avenue,
LONDON, E.C.

WHOSE FAC-SIMILE OF SIGNATURE AND TRADE MARK ARE ON THE LABEL OF EACH BOTTLE.

In Bottles at 1s. and 2s. 6d. (three times the size of 1s.) each.

The above Preparations are supplied by all the London and Provincial Patent Drug and Sundry Houses.

GREENSILL'S
ORIGINAL MONA BOUQUET,

Combining all the fragrant properties of Mona's choicest Flowers.

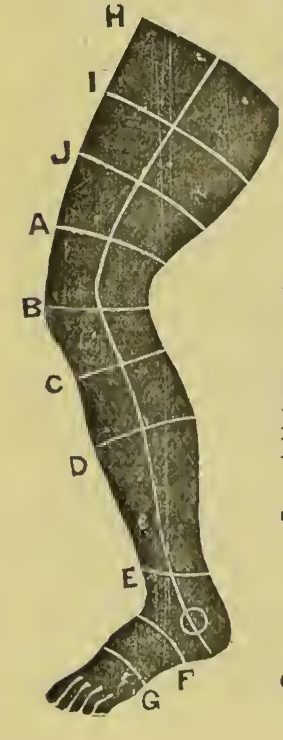
FIRST AND ONLY INVENTOR AND SOLE MANUFACTURER:—

T. S. GREENSILL,
STRAND STREET,
DOUGLAS, ISLE OF MAN.

Registered Trade Mark—"Tower of Refuge," Douglas Bay.

AGENTS—

LONDON—F. NEWBERY & SONS, W. EDWARDS, BARCLAY & SONS, PARTON & OSBORNE, WRIGHT, LAYMAN & UMNEY, J. SANGER & SONS.
EDINBURGH—DUNCAN & FLOCKHART.
BIRMINGHAM—SOUTHALL BROS. & BARCLAY.
COVENTRY—WYLEYS & COMPANY.
DUBLIN—McMASTER & HODGSON.



J. S. HAYWOOD,
CASTLE STREET, NOTTINGHAM,
INVENTOR AND MANUFACTURER OF
ELASTIC STOCKINGS, KNEE CAPS, LEGGINGS, ETC.,

The most efficient means of supporting Varicose Veins, Weakness, Sprains, Dislocations, &c.

ELASTIC ABDOMINAL SUPPORTING BELTS,
For Weakness, Pendulous Abdomen, Umbilical and Inguinal Hernia, Obesity, Dropsy, Ladies' Use before and after Accouchement, &c.

TRUSSES, CHEST PROTECTORS, SURGICAL AND SUSPENSORY BANDAGES, &c.
Made to order on the Premises.

List of Prices and Directions for Measurement forwarded upon application.

Greatest attention paid to SPECIAL Orders, which are invariably forwarded per return of Post.

HENRY YOUNG

(ESTABLISHED A.D. 1846),

INVENTOR OF THE ORIGINAL

"ARNICATED"

CORN & BUNION PLASTERS,

Which have established for themselves a world-wide reputation.

PRICES.

"ARNICATED" CORN.

Thin, 12 in box (round 6d. boxes)	2s. 4d.	per doz. boxes.
Thick, 12 in box (original 1s. fancy boxes)	3s. 4d.	"
Thin (plain boxes)	1s. 10d.	per gross.
Thick glass top boxes)	3s. 0d.	"

"ARNICATED" BUNION.

Small Thin, 6 in box (round 6d. boxes)	2s. 4d.	per doz. boxes.
Thick, 6 in box (original 1s. fancy boxes)	3s. 8d.	"
Large Thin (6 in flat box)	3s. 0d.	"
Thin (plain box)	4s. 6d.	per gross.
Thick (glass top box)	6s. 0d.	"

SUBJECT TO DISCOUNTS ALLOWED BY WHOLESALE HOUSES.

N.B.—Please see that YOUNG'S goods are supplied, as there are many worthless imitations.

Manufactory—72, CLERKENWELL ROAD, LONDON, E.C.

(LATE OF CARTHUSIAN STREET.)

WHEAT SOWING. NO MORE BIRD KEEPING BOYS.

[Neither BIRDS, ROOKS, or other Pests will touch the Seed, Wheat, or Corn dressed with this Chemical Composition. The success attending this Preparation (HAVING NEARLY DOUBLED ITS SALE) has caused several WORTHLESS IMITATIONS to appear during the past few years, under various but similar names, against which intending purchasers are respectfully CAUTIONED, this being the original and only Genuine Carbolized Wheat Protector.]

Patronized by the largest Wheat Growers in the Kingdom.

BEST AND CHEAPEST
DRESSING FOR
SEED WHEAT,

A NINEPENNY PACKET
DRESSES EIGHT
BUSHELS OF SEED.

D. CLARKE'S
CARBOLIZED WHEAT PROTECTOR

(Name and Label Registered under Trade Marks Act, No. 13,796)

FOR PREVENTING THE

SMUT IN WHEAT,

AND THE DESTRUCTIVE ATTACKS OF ANY

Birds, Rooks, Slug, Grub, or Wireworm,

Is warranted not to clog the Drill, and has been

USED FOR MORE THAN THIRTY-SIX YEARS

By Thousands of the first Agriculturists in the United Kingdom.

It materially assists the Germination of the Seed, and produces

WHEAT PERFECTLY FREE FROM SMUT,

And of greater Value than that grown from Seed dressed with other preparations.

Eight Bushels of Wheat can be dressed for Ninepence, and fit for the Drill in 10 minutes afterwards.

Prepared by G. B. CLARKE, M.P.S., Manufacturing Chemist,
WOBURN, BEDS.

Sold Retail in Packets, 9d. each, sufficient to dress EIGHT BUSHELS of Seed.

NO LIME OR ANY OTHER APPLICATION REQUIRED.

The following Testimonial is selected from Thousands received from various parts of the Kingdom.

WARHAM, near WELLS, NORFOLK, *January 2nd, 1880*

DEAR SIR,—I suppose your Carbolized Wheat Protector will answer for Barley, Peas, and Oats just the same as for wheat; if so please send me enough to dress 340 bushels, to Wells Station, G.E. Railway. I want it as soon as you can because I want to sow a piece of Wheat next week, weather permitting. I walked all over my Wheat to-day, and glad to say it answered well. *I did not see a Place where either Rooks or Pheasants have got it.* (I run up to Lord Leicester's cover which is full).

I am, dear Sir, yours truly, THOMAS W. SAVORY.

Mr. G. B. CLARKE.

Wholesale Agents—BARCLAY & SONS, 95, Farringdon Street, London.

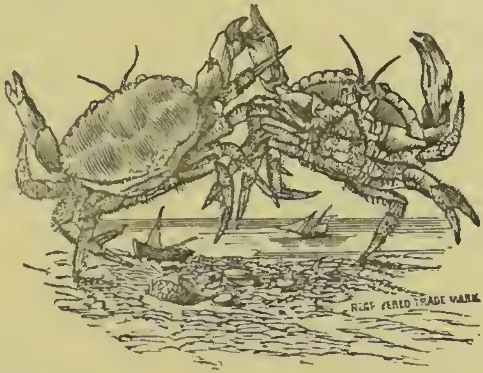
SOUTHALL'S

"AQUARIUM" SEA SALT

FOR

SEA WATER BATHS.

TRADE MARK.



THIS "Aquarium" Salt was used in preparing sea water for the Royal Aquarium, Westminster, and for the magnificent Aquarium at Aston, Birmingham, where 200,000 gallons are in constant use.

TESTIMONIALS.

From the ASTON LOWER GROUNDS COMPANY.

GENTLEMEN,—I am instructed by the Board of Directors to acknowledge the receipt of your letter signifying the completion of your work in manufacturing the whole of the sea water for our Aquarium. The Directors have great pleasure in stating that they are perfectly satisfied with the result, the animals added some months ago being in a thriving condition. The Board congratulates you on having carried out, with such completeness and success, so novel and extensive an undertaking. I am, Gentlemen, yours very truly,

MESSRS. SOUTHALL BROS. & BARCLAY. C. H. QUILTER, *Secretary.*

The *MIDLAND COUNTIES HERALD*, April 10th, 1879, alluding to the Aston water, styles it "a veritable reproduction which no animal, or plant, or chemist, can tell from water actually brought from the sea."

Sold by Chemists and Druggists, in Boxes (with Measure) at 1/0, 1/6 and 2/6 each.

DIRECTIONS.—For sea water of full strength add a gallon of water to each measureful of Salt. For aquarium purposes adjust the specific gravity with a Hydrometer or gravity bubble, so that its specific gravity shall be 1·027 at 60° F.

SOUTHALL BROS. & BARCLAY,

Manufacturing Chemists,

BIRMINGHAM, ENGLAND.

LINEHAM'S

WORLD'S HAIR DRESSING BALSAM

Unequalled for removing Scurf or Irritation, and Preventing Baldness. Perfumed with "Otto," 11/0; and an enlarged size, containing nearly as much as three small ones, 22/0 per dozen.

See a Host of Testimonials.

BRUNEL TERRACE, NOTTINGHAM, *November 18th*, 1876.

DEAR SIR,—Permit me to thank you for recommending to me LINEHAM'S HAIR DRESSING BALSAM. It is the very best preparation I have ever used for the removal of Dandriff from the Head. After using other remedies for many years I find this the most effectual.

Yours faithfully, J. B. GAYTON.

To Mr. CARTER, Hair Dresser, Poultry, Nottingham.

FOR PREMATURE GREY HAIR.

New and extraordinary Discovery. Unequalled for quality and price. Will not soil the dress or injure the health. The most marvellous Restorer. Safe, pleasant, and efficient. In 10-oz. bottles, 18/0 per dozen. Imparting such lustre to the Hair.

MADELEY STREET, DERBY, *March 9th*, 1878.

DEAR SIR,—I have great pleasure in bearing testimony to the remarkable efficacy of your Hair Restorer; the result is highly satisfactory, it has improved my hair both as to quantity and quality. Yours truly, S. R.

To Mr. LINEHAM.

LINEHAM'S BRITISH EXCELSIOR HAIR REGENERATOR.

LINEHAM'S INSTANTANEOUS WHISKER AND HAIR DYE will produce a permanent Brown or Black. In Cases, with Brush complete, 18/0 per dozen.

MAY BE OBTAINED THROUGH ANY WHOLESALE HOUSE.

Trade Mark Registered under the New Act, May 12th, 1877, No. 4408.

EVERY BOTTLE SAFELY ENCASED.

TRADE MARK.—SANCTIONED BY HER MAJESTY'S GOVERNMENT.

HEALTH, STRENGTH,

DR. LALOR'S PHOSPHODYNE.

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A Pure Solution of PHOSPHORUS in combination with Quinia, Cypripiden and Xanthoxylin, the Wonder of Modern Chemistry, free from Strychnia and all Dangerously Active Drugs. Pleasant to the taste, and the only Safe, Prompt, and Reliable PHOSPHORIC REMEDY for Overworked Brain, Worry, Anxiety, Excitement, Late Hours, Business Pressure, Nervous Prostration, Nerve Pain, Wasting Diseases, Asthmatic, Consumptive, Stomach and Liver Complaints, Impaired Nutrition, Impoverished Blood, Premature Decline, and all morbid conditions of the system, dependent upon the deficiency of Vital Force.

DR. LALOR'S PHOSPHODYNE

Purifies and enriches the Blood; Clears the Skin; thoroughly invigorates the Brain, Nerves, and Muscles; Re-energises the Failing Functions of Life by supplying the PHOSPHORIC element which has been wasted, and thus Imparts Energy and Fresh Vitality to the Exhausted Nervo-Electric Force, and Rapidly Cures every form of Nervous Debility, Paralysis, Nervous Mind and Heart Diseases, from whatever cause.

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IMPORTANT NOTICE.—Every Bottle bears the British Government Stamp, with the words DR. LALOR'S PHOSPHODYNE, London, England, engraved thereon by Order of Her Majesty's Honourable Commissioners **IF NOT, IT IS A FORGERY, and you have been imposed on by a worthless Imitation.**

"The Phosphoric Treatment of Disease," with Cures, post free from

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Specialities of tried value,

MANUFACTURED SOLELY BY

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Perfumers to the Queen,

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"The Inexhaustible Smelling Salts." *As supplied to the Queen.*

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INVALUABLE IN HOT ASSEMBLIES.
ALWAYS REFRESHING.

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"GLYCERINE AND HONEY JELLY."
For Softening and Improving the Hands, Face and Skin,
ALLAYING IRRITATION CAUSED BY HEAT,
ROUGHNESS OCCASIONED BY COLD WINDS,
AN UNFAILING REMEDY FOR CHAPPED HANDS.
Its effect upon the skin is almost instantaneous.

In Bottles, 6d., 1/0 and 1/6. *Metallic Tubes, 6d. and 1/0.*

"BABY'S SOAP." *The Original Registered Title.*

"BABY'S SOAP."

A Superior Mild Soap, prepared specially for the INFANT'S FIRST SKIN, delicately perfumed, and imparts the fragrance * * * * * of VIOLETS. * * * * *

Generally useful for Children or Adults with Tender Skin.

PRICE SIXPENCE.

"BAUER'S Head (& Bath) SOAP." *Registered Title.*

"BAUER'S HEAD (AND BATH) SOAP,"
COMPOSED OF
·ROSEMARY. BORAX GLYCERINE·
AND OTHER EMOLLIENTS.

Cleanses, Strengthens, and Promotes the GROWTH OF HAIR, removing Scurf, and producing healthy action of the SKIN. A luxury for Bath and Toilet. An excellent Shaving Soap. *PRICE SIXPENCE.*

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PATENT MEDICINE VENDORS,

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The attention of the Trade and Export Purchasers is called to the undermentioned articles, commanding a ready sale wherever introduced.

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A most carefully-prepared Dentifrice, and highly recommended for the Teeth and Gums. *In Pots, 6d. and 1/0 each.*

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For removing Grease, Paint, &c., from Silks, Satins, &c. *In Bottles, 6d. and 1/0 each.*

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An elegantly-prepared Dentifrice, for preserving and beautifying the Teeth and Gums, it removes the tartar, and gives a pearly whiteness to the Teeth. *In Pots, 6d. and 1/0 each.*

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An exquisite Toilet Preparation for beautifying and preserving the Complexion. Delicately perfumed. Specially adapted for use in Hot Climates. *In Packets, 6d., and elegant Boxes with Puff, 1/0 and 2/0 each.*

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This Wool, of a Delicate Flesh Tint, is introduced to obviate the unsightly appearance of ordinary White Wool. *In Packets, 3d. and 6d. each.*

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The best and most permanent Marking Ink, for Marking Silk, Linen, Cotton, &c., without preparation. Flows freely from the Pen, Steel or Quill, and is INDELIBLE. *In Bottles, 6d. and 1/0 each.*

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For keeping the Skin clear and healthy. *In Packets containing 4 Tablets, retail 1/0 per Packet.*

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Our Laboratories *(which are under the immediate supervision of one of the Principals)* are fitted with all the newest appliances, and we are enabled to execute orders at the shortest possible notice for every description of Drugs, Chemicals, and Pharmaceutical Preparations, of guaranteed purity.

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A CERTAIN CURE FOR TOOTHACHE, NEURALGIA, &c.

This remedy has been used for many years with the greatest success, and it is confidently recommended to all sufferers from the above distressing maladies, as it gives IMMEDIATE RELIEF in all cases. Numerous Testimonials have been received as to its marvellous virtues, a few of which are printed below.

RECENT TESTIMONIALS.

"ROYAL OAK," CHINGFORD, *February 10th, 1881.*

DEAR SIR,—My daughter having suffered from severe attacks of Neuralgia I was recommended to try "Nervaline" and I am pleased to say that a *single application completely* cured her. I write this in the interest of anyone who may be similarly affected, as you are at perfect liberty to publish this letter. I feel I cannot too strongly recommend it.

Yours truly, B. RICKETT.

12, NEW STREET, KENNINGTON PARK ROAD, LONDON, S.E., *March 4th, 1881.*

MR. IBBS, DEAR SIR,—I have much pleasure in testifying to the marvellous results effected by the use of "Nervaline." I had suffered intense pain with Neuralgia, and from *one application* obtained *immediate relief.* I cannot thank you too much for your valuable remedy. I am, Sir, yours very truly, WM. JAS. BOSWELL.

NERVALINE may be obtained of all Chemists throughout the World.

Wholesale of Burgoyne, Burbidges & Co., 16, Coleman Street, London, E.C.; or of Messrs. Barclay & Sons; Butler & Crispe; Edwards & Son; Hovenden & Sons; Newbery & Sons; Sanger & Sons; Sutton & Co.; &c., &c.

PRICE, 1/1½. *Full instructions for use in English, Dutch, and Spanish, are enclosed with each Bottle.*

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Prepared expressly for all the Patent Knife-Cleaning Machines, India Rubber and Buff Leather Knife-Boards. Knives constantly cleaned with it have a brilliant polish, equal to new cutlery. Packets, 3d. each; and Tins, 6d., 1s., 2s. 6d., and 4s. each.

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Prevent friction in cleaning and injury to the knife. All prices and qualities. Oakey's Wellington Knife Polish should be used with the Boards.

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(NON-MERCURIAL).

For Cleaning and Polishing Silver, Electro-Plate, Plate-Glass, Marble, &c. Tablets, 6d. each.

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This Article imparts an immediate, brilliant, and lasting polish to all kinds of Stoves, Ironwork, &c. No waste, dirt, or dust. Sold in solid blocks, 1d., 2d., and 4d. each, and 1s. Boxes.

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Furniture Cream, in bottles	6d. ,, 1/0 ,,
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By two series of experiments to ascertain the relative merits of various so-called Disinfectants.

Antiseptic, 0·1 per cent.	*Day on which mould appeared.*		*Day on which putrefactive odour was distinct.*	
	I.	II.	I.	II.
Water only	9	9	14	13
Terebene (Dr. Bond's)	10	10	13	18-23?*
Carbolic Acid (Calvert's No. 5)	None by	75th day	None by	75th day
Burnett's Fluid	9	9	12	12
Condy's Red Fluid	10	10	15	10
Turpentine	13	14	18-23?	18-23?*
Chloralum	8	8	10	11
Borax	8	9	18-23?	18-23?*
Cupralum (Dr. Bond's)	8	8	12	12
Ferralum (Dr. Bond's)	None by	14th day	8	8
Sodium Salicylate	10	10	14	14
Sanitas (Aromatic, No. 3)	8	9	9	10
Sanitas (Inodorous, No. 3)	9	9	15	11
McDougall's Fluid	12	9	13	12
Sanitas (Aromatic, No. 1)	9	9	14	14
Sanitas (Inodorous, No. 1)	9	8	15	11

* Some uncertainty as to exact day, owing to absence from home.

This Table was published in "Sanitary Record" of July 5th, 1878, and results confirmed by a third series of experiments.

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PRIZE MEDAL of the Sanitary Institute of Great Britain.

GOLD MEDALS—Havre and Moscow. **SILVER MEDALS**—Paris, Havre, and Naples.

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It is a concentrated and purified product, of *guaranteed strength.* When well mixed in 80 parts of water (1 oz. to half a gallon) it is the cheapest reliable preventive of infection or contagion; it stops all kinds of putrefactive change, and destroys *all* the lower forms of insect or vegetable life. The Acid (or powder) is very valuable to arrest decay of animal or vegetable matter, and to prevent the entry into Dwellings, Gardens, &c., of Insects and Reptiles, which dread the odour of Carbolic Acid that will emanate freely when the Powder or diluted Acid is sprinkled about infested places; the diluted Acid is especially useful to cleanse and purify Yards, Cellars, Stables, or Cowsheds, and to destroy Weeds on Garden Walks. A little of the raw Acid, applied to the roots with a pointed stick, will kill Dandelions or other plants on Lawns.

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Nos. 0 to 5	(Drachms to 10 ozs.)	1s. 0d. per gross.
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The Stock Colours are Red, Blue, Green, Orange, Violet, Grey, and White.
Stamping Name and Address 6d. per Gross (minimum 10 Gross).

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DIRECTIONS FOR USE.—Place the Cap in the hollow of the stick, and then upon the cork in the bottle. Slip an elastic band over the stick into the groove in the cap. Remove the Stick.

N.B.—A separate stick is necessary for each size cap, but one size elastic band serves for all up to No. 5.

PRICES—Sticks, 2d. each.; Elastic Bands, 4d. per gross.

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They are made to stand any climate.

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A Medicated Soap (free from Poison),

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DESTROYS FLEAS. CLEANSES THE SKIN. REMOVES ALL SMELL. GIVES GLOSS TO THE COAT.

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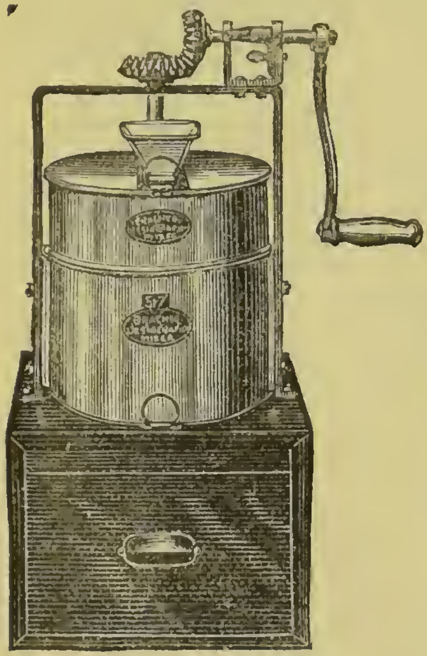

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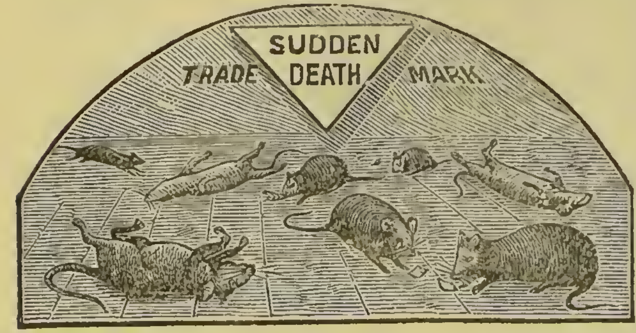

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DR. AYRES' EFFERVESCENT HEALTH GIVING SALINE, though so potent a remedy in these dire complaints, constitutes by its harmless and simple character, one of the most **suitable, refreshing, cooling, and invigorating summer beverages;** quickly allaying thirst, imparting to the blood pure constituents. By virtue of this property, it is rendered an **invaluable beverage for hot climates,** and a most reliable **Curative Agent;** in fact, it may be very justly termed

NATURE'S OWN CURE!!

Price 2s. 6d. per Bottle. **Wholesale Price on application.**

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TOILET M. & H. PAPER.

IN PACKETS, CONTAINING 500 SHEETS,

PRICE SIXPENCE.

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SPECIAL QUOTATIONS.

PERFUMERY of every known kind.

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TOILET SOAPS of every description.

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WHOLESALE PERFUMERS & FANCY SOAP MAKERS.

Concentrated (various)

CHOICE ESSENCES

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No. 30.. 12s. for 20 fluid ounces.
No. 24.. 9s. 6d. " "
No. 18.. 8s. " "

AND IN

Corked Bottles, 3s. 6d., 4s., 7s., 8s., and 12s. per doz.
Sprinklers, 4s., 7s. 6d., 8s., and 12s. per doz.
Stoppered Bottles, 9s., 12s., 14s., and 18s. per doz. and upwards.

POMADES, &c.

	PER DOZ.
Assorted (tall or squat)	4s. & 8s.
Nursery (large)	4s. & 9s.
Lime Juice and Glycerine	4s. & 8s.

Pomades, &c. (*continued*).

	PER DOZ.
Glycerine and Lime Cream	4s. & 8s.
Brilliantine	8s. & 12s.
(separable and unseparable.)	
Brilliantine (white rose) Stoppered Bottles	8s. & 12s.
Cherry Tooth Paste	4s. & 8s.
Areca Nut " "	4s. & 8s.
Lip Salve in Pots	4s. & 8s.

SPECIAL SOAPS,

In Boxes.

Cold Cream Soap, 3 tablets in box		12s. & 20s.
Coal Tar Soap	do.	8s. & 12s.
Carbolic	do.	8s. & 12s.
Glycne. & Oatmeal	do.	8s. & 12s.
" Transpnt.	do.	8s. & 12s.
" & Carbolic	do.	8s. & 12s.

Special Soaps, in Boxes (*continued*).

	PER DOZ.
Lavender (Sweet), 3 tablets in box	8s. & 12s.
Baby Soap, 4 tablets in box	9s.
" " 12 do.	27s.
Family Economic 4 do.	8s.
" " 12 do.	24s.
Thymol, 3 tabs. in box	8s. & 12s.

MEDICATED SOAPS,

In Wrappers.

Carpet & Cloth Soap	3s. 6d. & 7s.
Dog Soap	3s. 6d. & 7s.
Coal Tar (Family)	18s. & 27s. gr.
Camphrtd. Winter	27s. & 39s. "
Fuller's Earth	3s. 6d. doz.
Jeweller's	4s. "
Petroleum	4s. "
Pumice Stone	3s. 9d. "

Medicated Soaps (*continued*).

Juniper Tar	4s.	doz.
Sulphur	4s. & 8s.	"
Zinc	4s. & 8s.	"

SOAPS in Bulk.

Almond	At 56s., 64s., 74s., 84s., and 112s. per cwt.
Brown & White Windsor	
Curd	
Elder Flower	
Glycerine	
" and Almond	
Honey	
" and Almond	
Oatmeal	
Marshmallow	
Rose	
Sunflower	
Transparent Glycerine	

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PFLEIDERER'S

UNIVERSAL KNEADING AND MIXING MACHINE

(PATENTED IN ALL COUNTRIES.)

Is unsurpassed for **PILL MASSES, HORSE BALLS,**

And all other PHARMACEUTICAL PREPARATIONS, PLASTERS, LOZENGES, TOOTH PASTES, OINTMENTS, SOAPS, &c., and for Mixing Powders.

Fig. 29 c.

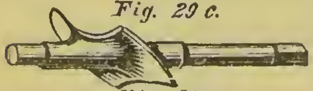
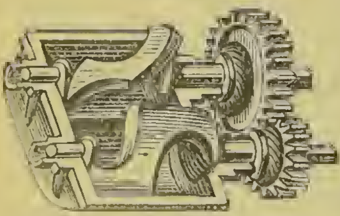


Fig. 24 c.



Top removed, showing interior of Machine.

THIS Machine, which has now fully established its name as the best Pill Mass Kneader and Mixer for all the above purposes, is exceedingly simple and compact in construction, occupies little space, and requires no skilled attendant. For Manufacturers of proprietary articles it has proved invaluable.

The victory of this Machine over all the old systems of *pestle and mortars, levers, edge-runners, breaks, stirrers, pans, and pugmills,* is due to the fact that it is the only apparatus combining in itself by so simple means *a perfect Mixer with a thorough Kneading Machine.*

The average time for making a mass, however stiff, from 5 to 15 minutes, according to the power by which the Machine is worked, while about two minutes suffice to mix a powder perfectly.

Extract from "THE CHEMIST AND DRUGGIST."

"Paul Pfleiderer's Kneading and Mixing Machine is specially adapted to the rising generation of pharmaceutists. We, of the olden days, were in the habit of wielding a mighty pestle with a seven pound antibilious mass on the end of it in a fashion such as modern porters would hardly care to imitate. But the training was not a good one for subsequent manipulation of a balance turning with the thousandth part of a grain. For kneading a pill mass we would strongly recommend this machine. It is also suitable for all similar operations, such as the manufacture of horse balls, biscuits, lozenge paste, paints, blacking, and other articles. The engraving shows the machine with the top removed. The powders are put in and the mixing is soon accomplished. The excipient is then added, and the two revolving discs rapidly knead the mass into a plastic condition. *The discs exactly fill up the cylindrical space. One revolves at a greater speed than the other, consequently they intersect each other's orbit at varying spots. This causes the continual interchange of pieces of the mass, which, as the wheel is turned, is constantly being broken up and re-united, pressed between the discs and the cylinders, and worked into condition on the truest mathematical principles.* The machines are in use in several large London houses, and have given the highest satisfaction. They are made in various sizes, of iron, gun metal, wood, stone, or vulcanite, according to requirements."

PAUL PFLEIDERER,

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PATENTEE AND SOLE MANUFACTURER.

SIR ASTLEY COOPER'S

PULMONIC COUGH AND ASTHMA PILLS.

"The supporting element of the BREATH, without which the BLOOD, and, therefore, the LIFE cannot be nourished."—*John Ruskin.*

THE above Pills are prepared from a *bonâ fide* prescription of the eminent Surgeon whose name they bear, and it is reported that this was his private formula, used by him in a long and extensive practice, as a remedy for Coughs attended with Asthmatic or Bronchial Affections.

Their efficacy in relieving difficulty of breathing and allaying irritation of the throat and chest is their great recommendation.

Twenty-five years' experience has proved that few remedies will so universally verify their recommendation, and Chemists will find them pay to introduce.

The following two Testimonials, out of many, very truthfully express their efficacy:—

KNIGHTSBRIDGE, *February 10th.*

DEAR SIR.—Having a commission from a friend to obtain for her a box of your excellent remedy for a cough, I cannot forbear adding a few words to express my own high opinion of Sir Astley Cooper's Cough and Asthma Pills as a medicine to cure such complaints. A few months since, and after an attack of influenza, I was seized with a most violent cough,—I really feared the rupturing of a blood-vessel; and the seat of irritation appearing to be much lower than the throat or chest, I suffered such excessive soreness of the whole body that I could scarcely move in bed for some days. At last I heard of your Pills, and immediately procured some. The effect was, if I may use the term, almost magical. I had sleep for the first time in many nights, and my cough speedily yielded to their soothing influence. I will only add that I think they cannot be too generally known.

I remain, yours truly obliged,
ELIZABETH THOMPSON.

92, NEW ROAD, CHELSEA, *January 2nd.*

SIR,—It gives me great pleasure to assure you that I have received more benefit from the use of Sir Astley Cooper's Cough and Asthma Pills than any medicine I ever tried. I found relief the first night I took them. Not only my cough, but my breathing is so much better. I consider them a very valuable medicine.

Yours, &c., RICHARD LARNER.

May be ordered through Messrs. BARCLAY & SONS, 95, Farringdon Street, or any Wholesale House.

RETAIL IN BOXES AT THE USUAL CHARGES.

Important to all having Household Management.

VALUABLE & EXCELLENT FAMILY MEDICINE

WHELPTON'S

ESTABLISHED VEGETABLE PURIFYING PILLS A.D. 1835.

TRADE MARK (REGISTERED)

Are one of those rare Medicines which, for their extraordinary properties, have gained an almost

UNIVERSAL REPUTATION.

During a period of nearly FIFTY Years they have been used most extensively as a **Family Medicine,** thousands having found them a simple and safe remedy, and one needful to be kept always at hand.

These Pills are purely Vegetable, being entirely free from Mercury or any other Mineral, and those who may not hitherto have proved their efficacy will do well to give them a trial.

Numbers are constantly bearing testimony to their great value, as may be seen from the Testimonials published from time to time. By the timely use of such a remedy many of the seriously afflicting disorders which result from proper means being neglected might be avoided and much suffering saved, for

"PREVENTION IS BETTER THAN CURE."

RECOMMENDED FOR DISORDERS OF THE

HEAD, CHEST, BOWELS, LIVER AND KIDNEYS;

ALSO IN

RHEUMATISM, ULCERS, SORES, and all SKIN DISEASES,

BEING

A DIRECT PURIFIER OF THE BLOOD

And other fluids of the human body.

Many persons have found these Pills of great service both in preventing and relieving SEA-SICKNESS; *and in Warm Climates they are very beneficial in all Bilious Complaints.*

ALSO

WHELPTON'S VEGETABLE STOMACH PILLS

Are particularly suited to Weakly Persons, being exceedingly mild and gradual in their operation, imparting tone and vigour to the Digestive Organs.

NEVER LEAVE HOME WITHOUT THIS SAFE APERIENT.

WHELPTON'S VEGETABLE ESTAB A.D. 1835. TRADE MARK. STOMACH PILLS

THIS USEFUL MEDICINE HAS INCREASING PUBLIC FAVOUR.

Sold in Boxes, price **7½d., 1s. 1½d.,** and **2s. 9d.,** by G. WHELPTON & SON, 3, Crane Court, Fleet Street, London, and all Chemists and Medicine Vendors at home and abroad. Sent free by post in the United Kingdom for 8, 14, or 33 stamps.

[1]

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